

# PATENT ABSTRACTS OF JAPAN

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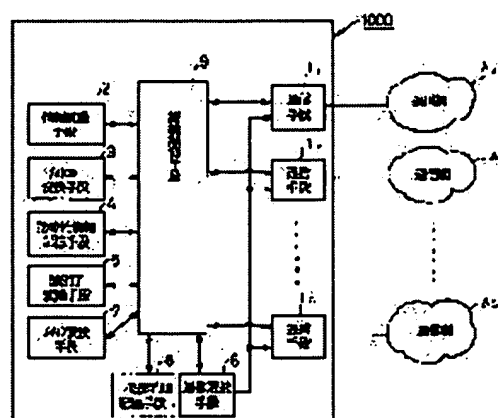
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## (54) PERSONAL COMMUNICATION SERVICE DEVICE

### (57)Abstract:

**PURPOSE:** To transfer multimedia calls to users extending between plural communication networks by selecting and controlling the communication means connecting with the plural communication networks by each means of an information recognition, a connective information storage, a protocol, a media and an identification conversion.

**CONSTITUTION:** An information recognition means 2 recognizes the structure and meaning of information to be inputted in communication means 11 to 1n from communication networks A1 to An. A protocol conversion means 3 performs the conversion of the communication protocol between each communication network. A connective information storage means 4 stores the connective information between the terminals that service users have and the communication networks. An identifier conversion means 5 performs the corresponding of individual identifier and the subscriber identifier in each communication network. A media conversion means 7 converts the media of input information. A connection procedure storage means 8 stores the connection procedure for every service user. A communication selection



means 6 selects the means 11 to 1n and a connection control means 9 uses the means 2 to 8 and performs controls. Thus, multimedia calls can be transferred to the service users between networks A1 to An.

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CLAIMS

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[Claim(s)]

[Claim 1] In the Personal Communication Service equipment which offers the call forwarding service of a call to a communication service user Two or more means of communications which communicate by connecting with two or more communication networks, and an information recognition means to recognize the structure information on informational thru/or the semantic information that it is inputted, A protocol conversion means to change the communications protocol between communication networks of this plurality to which these two or more means of communications are connected, A connectability information storage means to memorize the connectability information on at least one or more terminals which this Personal Communication Service user has, and these two or more communication networks, An identifier conversion means to perform matching with this user's person ID, and the subscriber identifier of each user of this in these two or more communication networks, A communication link selection means to choose the means of communications which performs the communication link with this user, and a media conversion means to change the informational media inputted, Personal Communication Service equipment characterized by providing a handshaking storage means to memorize handshaking for this every user, and the connection control means which makes communication link connection according to this handshaking.

[Claim 2] Personal Communication Service equipment according to claim 1 characterized by to provide a service selection means an information storage means to accumulate the structure information on said information inputted or the this information which has been recognized by said information recognition means, and which is inputted thru/or semantic information, and choose whether information transfer through this information storage means is performed in case it communicates with said Personal Communication Service user.

[Claim 3] In the Personal Communication Service equipment which builds the system which recognizes the physical information which human being generates, and changes At least one or more common information databases with which said recognition system has accumulated the information about the semantic content contained in physical information common to all the users of this recognition system, Have accumulated the additional information for every user of this recognition system to the information accumulated in this common information database. Personal Communication Service equipment characterized by providing at least one or more personal data bases, dividing a set with all common information database and all personal data bases into two or more groups, and arranging dispersedly.

[Claim 4] Personal Communication Service equipment characterized by having a media conversion system possessing a means to change into the physical information it is easier for the addressee of the recognition result of the recognition system in Personal Communication Service equipment according to claim 3 and this recognition system to understand rather than the physical information inputted into this recognition system, and changing.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the Personal Communication Service equipment which offers the Personal Communication Service which transmits a call to a communication service user.

[0002]

[Description of the Prior Art] Conventionally, to the service user who joins a communication network and receives that service, the telephone number is assigned as a subscriber's identifier and the demand which connects a call is given to a communication network to the subscriber who considers as the communicative purpose using this telephone number. However, this telephone number is assigned to the subscriber's loop or a terminal at the time of service subscription, and when two or more service users shared the same subscriber's loop and the same terminal, it had the problem that it could not necessarily connect with the target partner.

[0003] Moreover, they are a land mobile radiotelephone network and PHS (Personal Handy Phone System) besides a telephone network common as a communication network. Many networks managed by various administration, such as LAN in a network, a pager network, and a company, exist. A service user joins respectively to one or two or more communication networks which offer giving [ to wish one's service ], and has the subscriber identifier and terminal for connecting with each communication network. For this reason, the communication network to which the terminal which the partner who is going to communicate has is connected, and the subscriber identifier have been grasped, and they needed to be specified clearly and needed to carry out call origination. Furthermore, in spite of having carried out call origination, when communication link connection was not made, the recurrence call might need to be repeated with two or more communication networks. The Personal Communication Service equipment which offers the call forwarding service of a call to a voice message service user conventionally as an approach of solving this is used. An example of the configuration of conventional Personal Communication Service equipment is shown in drawing 26 .

[0004] The Personal Communication Service equipment shown in drawing 26 is the means of communications 3011 which communicates by connecting with telephone networks A and B, and 3012. It consists of a protocol conversion means 302 to change the communications protocol between telephone networks, a connection control-procedure storage means 304 memorize the connection control procedure of the call which received a message, and a connection control means 303 that makes communication link connection according to the connection control procedure memorized.

[0005] A Personal Communication Service user makes the handshaking storage means 304 memorize by making into a connection control procedure the subscriber identifier of a destination terminal which wants to transmit to Personal Communication Service equipment. When the call addressed to a user receives a message from a telephone network A, according to the procedure indicated by the connection control procedure, connection with a user's terminal is tried via a telephone network B. When connection is made to a user's terminal, it is two means of communications 3011 and 3012. A call is transmitted by connecting comrades within equipment. When a communications protocol which is

different with a telephone network A and a telephone network B is used at this time, it becomes the communication link through the protocol conversion means 302 between two means of communications. Thus, a transfer of the call which received a message according to the connection control procedure beforehand set up by the user is realizable.

[0006] However, ISDN (Integrated Services Digital Network) By spread, it can communicate now as media of the information with which a service user communicates by various media, such as data communication not only between the message with voice but computers, and a dynamic-image communication link in TV meeting. Moreover, the terminal of a voice single function to the multimedia terminal is going also across the terminal which receives the communication service of these various media variably. However, although the interconnect service between the communication networks of various kinds of existing mentioned above is offered about the message with voice, when it is going to communicate by media, such as an image, various information source coding methods are put in practical use and the interconnectivity between them is not enough [ the same dynamic image ].

[0007] Furthermore, the conventional example in the case of communicating at the terminals which cannot treat information on the same media is shown in drawing 27 . For example, when the terminal 400 which received the dynamic-image data encoded by MPEG1 criterion from the communication network has only the standard decryption means 401 for H.261, a service user stores temporarily the dynamic-image data received by means of communications 406 in the information storage means 402. And the data is sent to the media conversion means 403 via are recording media, such as a magnetic tape, using a communication network. A service user sends again the dynamic-image data which directed this data for the media conversion means 403, and were changed [ data ] in conversion to the standard dynamic-image data for H.261 to a terminal 400 via an are recording medium, using a communication network. A terminal 400 changes the received dynamic-image data into dynamic-image information with the playback means 404 which changes including the standard decryption means for H.261, and displays this with the display means 405.

[0008] Thus, when the terminals which cannot treat the same media communicated, in advance of the communication link, after communication link termination, the service user needed to summarize all information using the media conversion function, and needed to do clearly media conversion of the information transmitted or received. For this reason, when a user did not need to have the media conversion function between media of various information when service users with a terminal without interconnectivity try to communicate, or the user did not have a suitable media conversion means, there was a case where an informational communication link could not be performed even if a communication line is only connected.

[0009] Moreover, in the communication network which set it as the main purposes to perform the communication link in the real times, such as a telephone, when a partner to a response cannot be found to a communicative demand, it will be treated as call loss. Generally the automatic telephone answering set conventionally shown in drawing 28 as an approach of solving this is known.

[0010] With an example of the configuration of the automatic telephone answering set 500 shown in drawing 28 The means of communications 501 which connects with a telephone network, and sends and receives speech information, and a call means 502 to call a service user when a call in occurs, A voice storage means 503 to accumulate the speech information inputted, and a playback means 504 to reproduce the accumulated voice-told message, It consists of a connection control-procedure storage means 505 to memorize that of each means or a telephone network, and the control procedure of connection, an input means 506 to input a connection control procedure, and the connection control means 507 that performs control based on handshaking. The answering machine service user sets up the connection control procedure of whether to accumulate a voice-told message using the input means 506 beforehand. When it is a setup which accumulates a voice-told message, if a call in is in an automatic telephone answering set, an answering machine service user will be called, but if there is no response from a service user even if it carries out fixed time amount progress, dispatch of a voice-told message will be demanded from an addresser. The voice-told message which received is accumulated in the voice storage means 503, and reproduces the voice-told message accumulated based on directions of an

answering machine service user using the playback means 504.

[0011] Thus, although a voice-told message can be accumulated from an answering machine service user to the are recording service equipment in a terminal or a network in an automatic telephone answering set when there is no response, whether are recording as a message is carried out needs to set up to the are recording service equipment which has the answering machine service user who is an addressee in a terminal or a network. And a flexible setup of carrying out the switch according to an addresser was not able to be carried out. Moreover, it needed to connect with the partner using another means of communications and there was troublesomeness to which the communication service user of an origination side does call origination again himself to carry out the communication link with an answering machine service user on urgent business.

[0012] Moreover, when providing two or more users with a Personal Communication Service, the function concerning information processing may be used in common by two or more users like the are recording service equipment which accumulates the voice-told message mentioned above. However, considering the case where a Personal Communication Service is offered ranging over various communication networks, and offering various supplementary services using much information processing functions If the function manager of the communication link process resources concerning communication link connection and the function manager of the information processing resource for performing a supplementary service are acting according to an individual like the former When the information processing which is needed also in a possible situation was not able to be received, since the case where there is no opening in a communication resource and connection is impossible for it may have happened even if an opening is in an information processing resource conversely, communication link connection had the problem that synthetic resource use effectiveness was bad.

[0013] Moreover, during the location of the terminal, powering on, and a message, the administration of the communication network to which status information, such as accounting, is connected in the terminal itself is collected to the case of the connectability information on the terminal which a Personal Communication Service user has, for example, the terminal of a land mobile radiotelephone network, using the procedure defined within the net suitably, and it has the database which stores them in it. And the connectability information is used for communication link connection control with a terminal etc. However, any ordinary subscribers other than the administration etc. cannot acquire the information directly stored in the database via communication lines, such as a telephone network. For this reason, there was a problem that call connection control whose service user who are ordinary subscribers other than the administration of a communication network uses connectability information could not be performed itself.

[0014] Moreover, there are conditions, such as existence of the activity window which is vacant in whether close/OFF of the power source of the workstation in which they are terminals if conditions, such as existence of connection of the telephone terminal to the subscriber's loop, off-hook/on hook one, and a message/call, are LANs, such as for example, a company network, and a user log in if it is a telephone network, for every communication networks of various kinds of, and many conditions of a proper exist according to the class of each communication network and terminal. For this reason, the status information acquired according to the class of terminal which a communications partner has differed, and there was a problem that connection control had to be performed after the service user itself changes such status information into connectability information.

[0015] Moreover, those who are going to perform the communication link with a communication service user with the subscriber identifier and terminal for joining two or more communication networks and connecting with each communication network When the media which the communication network to which each terminal which a partner has is connected and a subscriber identifier, and each terminal can treat have been grasped After collecting the connectability information on each terminal, the optimal terminal for connection was chosen and the troublesomeness which specifies the subscriber identifier of the terminal clearly and carries out call origination was.

[0016] Moreover, after starting a communication link, when a terminal moves, degradation of communication link quality may arise, or although there is an advantage that migratory [ of a terminal ]

improves in radio, when the worst, communicative cutting may take place by modification of a communicative path. The land mobile radiotelephone method shown in drawing 29 as an approach for this is learned conventionally. The outline of a land mobile radiotelephone method is described below.

[0017] A land mobile radiotelephone method consists of two or more base transceiver stations 601 connected by the wire net 604 which consists of two or more migration telephone switchboards 603, and a wireless terminal 602. A base transceiver station 601 is arranged in piles in a part of each of the grasp. When the boundary of the attainment range of an electric wave with the base transceiver station which is communicating when the wireless terminal 602 moves is approached and communication link quality deteriorates, hand off actuation which switches the communication link with the wireless terminal 602 to connection with other base transceiver stations is performed by cooperation with the wireless terminal 602 and a base transceiver station 601. However, when reservation of the wireless resource between the wireless terminal 602 and a base transceiver station 601, the communication link resource from a base transceiver station 601 to a wire net 604, or the communication link resource in a wire net 604 cannot be performed in the case of this hand off or the wireless terminal 602 has come out of the communication link service area where the base transceiver station 601 is arranged, problems, such as cutting of the communication link mentioned above, are not solved completely.

[0018] Moreover, even when communicating with the same communication service user, there was troublesomeness which the media of the information which is going to communicate, the instancy nature of the connection to demand and a communication link, the cost which can be spent on the communication link, etc. specify the subscriber identifier of the terminal clearly after choosing the communication network and terminal suitable for the contents of service which an addresser demands himself, and carries out call origination.

[0019] Next, the answering machine mentioned above describes the conventional example in the service which accumulates a voice-told message. Are recording of a voice-told message and the example of the configuration of a regenerative apparatus 700 are shown in drawing 30. The example of a configuration of drawing 30 consists of the voice-told message are recording means 701, the connection control means 702, the voice playback means 703, and the delimiter funiculus means 704 between messages. Between voice-told message A-C, at the time of each voice-told message input, the delimiter between messages is automatically inserted by the connection control means 702, and it is accumulated.

[0020] In order to have got to know the contents of the voice-told message in which plurality was accumulated, the approach of whether it reproduces sequentially from the start and all voice-told messages are heard or to repeat searching the delimiter between messages, hearing the aliquot of the head of a voice-told message, and guessing the contents to each voice-told message was performed. However, by this approach, when many voice-told messages were accumulated, there was a problem of spending much time amount in grasping the outline of those contents.

[0021] The recognition system which recognizes the inputted physical information is required of the media conversion system which changes and outputs the physical information inputted in the system applied to this kind of Personal Communication Service equipment on the other hand to the physical information on other media. In the recognition system which recognizes the physical information which human being who is represented by a voice recognition system and the handwritten character recognition system generates, the database for mapping with the description included in physical information and the print-out of a recognition system is needed.

[0022] As a way method of the conventional recognition system, as shown in the block diagram of drawing 3131, it is constituted, and the description which can recognize as many users' as possible physical information is extracted beforehand, it accumulates in the physical information database 892, and the recognition server 890 has a method of recognizing physical information using the description. Since are recording of the optimal information for every user is not made in the physical information database 892 in case of this approach, it is impossible to perform recognition optimal for each user. Moreover, as an option, as shown in the block diagram of drawing 3232, it is constituted, and the description which recognizes physical information for every user is extracted beforehand, it accumulates in the physical information database 895 as personal recognition information 896, and the recognition

server 890 has a method of recognizing physical information for every user using the description. Since are recording of the optimal information for every user concentrates on the same physical information database 895 and is made in case of this approach, with the increment in the user of a recognition system, the information which should be accumulated in a database also became huge and it is necessary to attain large-scale-ization of a database in connection with this.

[0023]

[Problem(s) to be Solved by the Invention] Since interconnectivity was not always able to be held good among two or more communication networks with this conventional kind of personal communication device like in the case of the Personal Communication Service which was described above and which transmits a call to a communication service user, the multimedia communication service over between two or more communication networks was not able to be offered.

[0024] Moreover, since are recording of the optimal information for every user was not made in a database in the case of an example of the recognition system applied to this conventional kind of personal communication device, it was impossible to have performed recognition optimal for each user. Moreover, since it concentrates at the database with the same are recording of the optimal information for every user in the case of another example of the recognition system and is made, with the increment in the user of a recognition system, the information which should be accumulated in a database also became huge and it is necessary to attain large-scale-ization of a database in connection with this.

[0025] The 1st purpose of this application is to enable it to offer the Personal Communication Service which transmits a multimedia call to a communication service user ranging over between two or more communication networks.

[0026] Moreover, the 2nd purpose of this application is to enable it to perform optimal recognition for every user, without attaining large-scale-ization of a database, even if the users of a recognition system increase in number remarkably.

[0027]

[Means for Solving the Problem] In order to attain the 1st above-mentioned purpose, the 1st configuration of the Personal Communication Service equipment of invention of this application 1st In the Personal Communication Service equipment which offers the call forwarding service of a call to a communication service user Two or more means of communications which communicate by connecting with two or more communication networks, and an information recognition means to recognize the structure information on informational thru/or the semantic information that it is inputted, A protocol conversion means to change the communications protocol between communication networks of this plurality to which these two or more means of communications are connected, A connectability information storage means to memorize the connectability information on at least one or more terminals which this Personal Communication Service user has, and these two or more communication networks, An identifier conversion means to perform matching with this user's person ID, and the subscriber identifier of each user of this in these two or more communication networks, Let it be a summary to provide a communication link selection means to choose the means of communications which communicates with this user, a media conversion means to change the informational media inputted, a handshaking storage means to memorize handshaking for this every user, and the connection control means that makes communication link connection according to this handshaking.

[0028] Moreover, in case the 2nd configuration of the Personal Communication Service equipment of invention of this application 1st communicates with an information-storage means accumulate the structure information on said information inputted or the this information which has been recognized by said information recognition means and which is inputted thru/or semantic information, and said Personal Communication Service user, it makes it a summary to provide a service selection means choose whether information transfer through this information-storage means is performed.

[0029] Moreover, the 3rd configuration of the Personal Communication Service equipment of invention of this application 1st The communication link process-resources management tool which investigates and memorizes the operating condition of the resource concerning each communications processing of two or more of said communication networks, let it be a summary to provide the means of



communications which communicates between an information processing resource-management means to investigate and memorize the operating condition of the resource concerning each information processing of two or more information processors in these two or more communication networks, the communication link process-resources management tool of each this, and an information processing resource-management means.

[0030] Moreover, the 4th configuration of the Personal Communication Service equipment of invention of this application 1st In order to collect said connectability information on at least one or more terminals and said two or more communication networks which said Personal Communication Service user has Let it be a summary to provide an automatic call origination means to perform call origination to this user's terminal automatically, and a connectability information gathering means to collect the connectability information on this terminal while the call is performing the call of connection or this user.

[0031] Moreover, the 5th configuration of the Personal Communication Service equipment of invention of this application 1st makes it a summary to provide a connectability signal transduction means to memorize the correspondence about the status information and said connectability information on a proper to the terminal, to each of the class of terminal which said Personal Communication Service user uses.

[0032] Moreover, the 6th configuration of the Personal Communication Service equipment of invention of this application 1st makes it a summary to provide a terminal media selection means to choose the terminal and media which try connection first according to the connectability information on at least one or more terminals which this user has, when the need for a communication link arises to said Personal Communication Service user.

[0033] Moreover, the 7th configuration of the Personal Communication Service equipment of invention of this application 1st makes it a summary to provide a communication link re-connection setting means to reset the communication link which changes the media or means of communications which communicates with this user, when the connectability of at least one or more terminals and said two or more communication networks which said Personal Communication Service user has during a communication link changes.

[0034] Moreover, the 8th configuration of the Personal Communication Service equipment of invention of this application 1st This Personal Communication Service user requires in said Personal Communication Service equipment. A service request condition storage means to memorize service request conditions, such as the permeability of the cost concerning the instancy nature or connection, and a communication link of connection or information or those combination, is provided. Let it be a summary to choose said means of communications to which said communication link selection means communicates with this Personal Communication Service user based on these service request conditions.

[0035] Moreover, the 9th configuration of the Personal Communication Service equipment of invention of this application 1st The structure information on said information inputted or the this information which has been recognized by said information recognition means and which is inputted thru/or semantic information, Or the information extract means which takes out the information on some fields containing a part of fields or specific keywords specified by said Personal Communication Service user out of the information accumulated in said information storage means is provided. this -- media conversion was carried out by some of information or said media conversion means of a field -- this -- let it be a summary to transmit the information on some fields to this user's terminal.

[0036] In order to attain the 2nd purpose of the above, the 1st configuration of the Personal Communication Service equipment of invention of this application 2nd In the Personal Communication Service equipment which builds the system which recognizes the physical information which human being generates, and changes At least one or more common information databases with which said recognition system has accumulated the information about the semantic content contained in physical information common to all the users of this recognition system, Have accumulated the additional information for every user of this recognition system to the information accumulated in this common

information database. It is characterized by providing at least one or more personal data bases, dividing a set with all common information database and all personal data bases into two or more groups, and arranging dispersedly.

[0037] The 2nd configuration of the Personal Communication Service equipment of invention of this application 2nd In the Personal Communication Service equipment which builds a voice recognition system and changes At least one or more phoneme information databases concerning [ said voice recognition system ] phoneme information, Have accumulated the additional information for every user of this voice recognition system to the information accumulated in this phoneme information database. It is characterized by providing at least one or more personal data bases, dividing a set with all phoneme information database and all personal data bases into two or more groups, and arranging dispersedly.

[0038] The 3rd configuration of the Personal Communication Service equipment of invention of this application 2nd In the Personal Communication Service equipment which builds a handwritten character recognition system and changes At least one or more structure information databases concerning [ said handwritten character recognition system ] the structure of a handwriting alphabetic character, Have accumulated the additional information for every user of this handwritten character recognition system to the information accumulated in the structure information database. It is characterized by providing at least one or more personal data bases, dividing a set with all structure information database and all personal data bases into two or more groups, and arranging dispersedly.

[0039] The 4th configuration of the Personal Communication Service equipment of invention of this application 2nd is characterized by having a media conversion system possessing a means to change into the physical information it is easier for the addressee of the recognition result of the recognition system in the 1st configuration of invention of this application 2nd and this recognition system to understand rather than the physical information inputted into this recognition system, and changing.

[0040] The 5th configuration of the Personal Communication Service equipment of invention of this application 2nd is characterized by having a media conversion system possessing a means to change into speech information the result which the 3rd recognition system in a configuration and this recognition system of invention of this application 2nd have recognized, and changing.

[0041] The 6th configuration of the Personal Communication Service equipment of invention of this application 2nd is characterized by having a media conversion system possessing a means to change into text the result which the 2nd recognition system in a configuration and this recognition system of invention of this application 2nd have recognized, and changing.

[0042]

[Function] In the 1st configuration of the Personal Communication Service equipment of invention of this application 1st Since Personal Communication Service equipment holds the connectability information on the terminal which a service user has and an available terminal type, media, etc. are automatically recognized at the time, When communicating, after performing suitably media conversion according to handshaking which protocol conversion, an addresser, and an action addressee require etc. only by carrying out call origination in a service user's person ID, it can communicate at the optimal terminal for the communication link.

[0043] Moreover, in the 2nd configuration of the Personal Communication Service equipment of invention of this application 1st, a real-time communication link or the communication link which accumulates information temporarily can be performed according to the demand of an addresser and an action addressee. Furthermore, when the sent informational media cannot be treated with an accepting station, the communication link which changes into media can be performed.

[0044] Moreover, in the 3rd configuration of the Personal Communication Service equipment of invention of this application 1st, since connection control in consideration of the busy condition of information processing resources, such as not only communication link process resources but various servers, can be performed in case the communication link through the various server functions concerning information processing of an information recognition means, a media conversion means, etc. is carried out, offer of efficient use of these resources and little service of delay becomes possible.

[0045] Moreover, in the 4th configuration of the Personal Communication Service equipment of

invention of this application 1st, the connectability information on the terminal which the communication service user who joins the existing communication network has can be collected automatically, without troubling hands, such as an addresser, it is using further in the case of connection control of the connectability information, and connection with the optimal terminal is attained in a situation when call origination is made.

[0046] Moreover, in the 5th configuration of the Personal Communication Service equipment of invention of this application 1st, it can treat systematically as connectability information, without making a service user conscious of various status information which is connected to various communication networks and which is defined for every terminal, when offering the Personal Communication Service over between two or more communication networks.

[0047] Moreover, in the 6th configuration of the Personal Communication Service equipment of invention of this application 1st, it has two or more terminals and the delay and call loss to connection can be reduced by trying connection first by the terminal and media which are considered to be the best for the communication link out of each terminal in the communication link addressed to a service user which can receive service with two or more communication networks.

[0048] Moreover, in the 7th configuration of the Personal Communication Service equipment of invention of this application 1st, since alternative service can be offered to a service user when communicative quality, transmission capacity, etc. change with migration of a terminal etc., big deterioration of a quality of service can be prevented synthetically.

[0049] Moreover, in the 8th configuration of the Personal Communication Service equipment of invention of this application 1st, the optimal service judged from the both sides of the contents of service which addressers, such as media of the information which is going to communicate, and the instancy nature of the connection to demand and a communication link, cost which can be spent on the communication link, and an addressee demand, and the contents of the service which can actually be offered in the situation can be offered, without troubling a user's hand.

[0050] Moreover, in the 9th configuration of the Personal Communication Service equipment of invention of this application 1st, it becomes possible to extract the part or keyword used as a header from the voice-told message accumulated continuously, and to carry out media conversion of them to information, such as an alphabetic character. By furthermore transmitting it to a user's terminal, outlines, such as an accumulated voice-told message, can be known from a terminal.

[0051] In the 1st configuration of the Personal Communication Service equipment of invention of this application 2nd, since it is made by the database of plurality [ hold / for every user / the peculiar information for every user of a recognition system ], even if the users of a recognition system increase in number remarkably and it does not correspond by large-scale-ization of a database, it can be managed.

[0052] Moreover, in the 2nd configuration of the Personal Communication Service equipment of invention of this application 2nd, since holding the peculiar information for every user of a voice recognition system for every user is carried out by two or more databases, even if the users of a voice recognition system increase in number remarkably and it does not correspond by large-scale-ization of a database, it can be managed.

[0053] Moreover, in the 3rd configuration of the Personal Communication Service equipment of invention of this application 2nd, since it is made by the database of plurality [ hold / for every user / the peculiar information for every user of a handwritten character recognition system ], even if the users of a handwritten character recognition system increase in number remarkably and it does not correspond by large-scale-ization of a database, it can be managed.

[0054] Moreover, it sets in the 4th configuration of the Personal Communication Service equipment of invention of this application 2nd. Since the addressee of the recognition result of the recognition system in the 1st configuration of the above and this recognition system has a media conversion system possessing a means to change into the physical information which is easy to understand rather than the physical information inputted into this recognition system and changes In case the physical information inputted into this media conversion system is changed and outputted to the physical information on another media, it becomes possible to simulate and output the physical information on the media of the

output side of the user who inputted physical information.

[0055] Moreover, in the 5th configuration of the Personal Communication Service equipment of invention of this application 2nd, since it has a media conversion system possessing a means to change into speech information the result which the recognition system and this recognition system of the configuration of the above 3rd have recognized and changes, a handwriting alphabetic character can be recognized and it can output as speech information.

[0056] Moreover, in the 6th configuration of the Personal Communication Service equipment of invention of this application 2nd, since it has a media conversion system possessing a means to change into text the result which the recognition system and this recognition system of the configuration of the above 2nd have recognized and changes, voice can be recognized and it can output as handwriting text.

[0057]

[Example] Below, the example of this invention is explained.

[0058] Drawing 1 is the example of invention configuration of the 1st of this application 1st. Setting in the example shown in drawing 1, Personal Communication Service equipment 1000 is various communication network A1 -An(s). 11-1n of means of communications which communicate by connecting, The structure information on informational thru/or the semantic information that it is inputted Matching with an information recognition means 2 to recognize, a protocol conversion means 3 to change two or more communications protocols between communication networks, a connectability information storage means 4 by which the connectability information between the terminals and communication networks which a service user has is memorized, a person ID, and the subscription identifier in each communication network It consists of the identifier conversion means 5 to perform, a communication link selection means 6 to choose the means of communications which performs a communication link, a media conversion means 7 to change the informational media inputted, a handshaking storage means 8 by which handshaking for every service user is memorized, and a connection control means 9 that makes communication link connection according to handshaking.

[0059] Moreover, an example of the topology of the Personal Communication Service equipment 1000 by the 1st configuration of invention of this application 1st and various communication networks is shown in drawing 2. The Personal Communication Service equipment shown in drawing 2 is a thing supposing use in a company, it connects with a telephone network, ISDN (integrated services digital network), a land mobile radiotelephone network, a pager network, and a PHS network through PBX (private branch exchange)1001, and connection with broadband ISDN, or Existing LAN and ATM-LAN is also made.

[0060] With reference to drawing 1 and drawing 2, detailed actuation of the example of the 1st configuration of invention of this application 1st is explained. The Personal Communication Service user using this Personal Communication Service equipment is beforehand registered to this equipment, and inputs required handshaking and connectability information into this equipment. In communicating to the service user of this equipment, an addresser connects with this equipment first. As an identifier at the time of connection, when an individual ID function is offered with a public network, it depends on the function in a public network for the function to transmit the call addressed to a service user to Personal Communication Service equipment. What is necessary is just to carry out call origination to the subscription identifier of this equipment which is a meaning to a service user, since there is migratory [ no / of this equipment ] when an individual ID function is not offered with a public network.

[0061] Based on connectability information or handshaking, the connection control means 9 performs control to the call which received a message. When a service user has two or more terminals which join two or more communication networks, it registers with the connectability information storage means 4 by making into connectability information a subscription identifier, media, transmission speed of each terminal which can be treated, etc. By updating serially the connectability information about a condition, connectability (the propriety of connection, and time delay to connection), etc. of a terminal, optimal connection control can also be performed in the situation at that time. A service user inputs a detailed setup about handshaking for every individual into the handshaking storage means 8, and makes it memorize beforehand. In addition, the operation which carries \*\* in this equipment beforehand partly as

a subset about a procedure which is generally used among setup about handshaking is sufficient. In this case, handshaking can be set up easily, without a user describing all procedures himself.

[0062] The example about handshaking is described below. For example, when the base of a service user's living-activities format is fixed every week or every day, a bias arises statistically to a terminal connectable [ with a day of the week or a time zone ] with a service user. In such a case, the base of a user's living-activities format is described to handshaking, and reduction of the time delay which connection takes can be aimed at by trying the preferential connection with the terminal with which connection is expected based on it. Moreover, connection can be made by describing a service user's schedule to handshaking still more finely. It may describe to the calculating machine in which an individual has this service user's schedule, and the approach of receiving schedule data from a service user's calculating machine is sufficient as this equipment. In this case, as shown in drawing 3 R> 3, the means of communications 11 with the electronic notebook 10 with communication facility used conventionally can be carried out by carrying in this equipment. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 3. Moreover, Anx is a communication network which intervenes between an electronic notebook 10 and means of communications 11.

[0063] Next, the terminal in which a service user has the information media of the call which received a message explains handshaking when the ability not to treat. For example, in case dynamic-image information is communicated, when coding methods differ for the dynamic-image information which can be treated at the terminal in which a service user has the dynamic-image information which communicates, the dynamic-image coding method which can treat the terminal which a service user has from connectability information is investigated. The dynamic-image information inputted is transmitted to a user's terminal through means of communications, after performing coding method conversion with a media conversion means. By securing the information processing resource of a media conversion means at the time of a call in, a dynamic-image communication link while performing media conversion in the real time also becomes possible. An example in case a playback means 24 of a terminal 23 by which the dynamic-image data encoded by MPEG1 criterion by the coding means 22 in the terminal 21 which a dynamic-image information addresser has in drawing 4 were received has only the standard decryption means 25 for H.261 is shown. In addition, the part shown with the same sign as drawing 1 shows it of drawing 1, and a corresponding part among drawing 4.

[0064] If a message is received in the communication link of the dynamic-image data with which this equipment was encoded by MPEG1 criterion to a service user, connection with the terminal which has the decryption means of MPEG1 criterion with reference to the connectability information storage means 4 will be tried preferentially. However, when the terminal which a service user has at this time does not have the decryption means of MPEG1 criterion, or when media conversion is being directed to the connection control procedure, while transmitting the call which received a message to the media conversion means 7, communication link connection is made between the terminals which a user has from the media conversion means 7. And if it has the standard decryption means 25 for H.261 like the terminal 23 which a service user has, for example, a terminal, the conversion to the standard sign for H.261 of MPEG1 criterion from a sign will be directed to the media conversion means 7. However, the media conversion means 7 has the conversion means 26 from a sign to the standard sign for H.261 of MPEG1 criterion. In this case, the dynamic-image data sent from a terminal 21 are changed in the real time with the media conversion means 7, and the changed dynamic-image data are sent to a terminal 23 through communication network A2a by communication link connection set up previously. A terminal 23 changes the received dynamic-image data into dynamic-image information with the playback means 24 which changes including the standard decryption means 25 for H.261, and displays this with the display means 27.

[0065] Moreover, when there is a connection request of voice communication to a service user only with the terminal which can perform only the input, transmission and reception, and a display of a character code, for example, the communication link which changes and displays the speech information sent from an audio terminal on text is attained by making communication link connection through an

information recognition means. The example of the communication link connection which used the information recognition means 2 for drawing 5 is shown. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 5.

[0066] Connection with the audio terminal in which a service user has the voice communication to the service user based on the voice data with which this equipment was sent from the audio terminal 31 with reference to the connectability information storage means 4 when a message is received is tried preferentially. However, by the case where the terminal which a service user has at this time does not have a voice message means, the case where information recognition is being directed to handshaking, etc. If the terminal which a service user has is the alphabetic character terminal 32 and has the input of a character code, transmission and reception, and a display means While transmitting to an information recognition means 2 to recognize an audio phoneme or the semantic information on a word for the call which received a message, and to output a result as a character code, communication link connection is made between the terminals which a user has from the information recognition means 2. The information recognition means 2 has the speech recognition means 33 and the character code generating means 34, and it directs them so that voice may be recognized to this information recognition means 2 and that result may be outputted by the character code. Recognition processing of the voice data sent to the information recognition means 2 is carried out in the real time, and the character code outputted is sent to the alphabetic character terminal 32 through communication network A2b by communication link connection set up previously. The alphabetic character terminal 32 displays the received character code with a display means (un-illustrating).

[0067] When making communication link connection described above and a communication link is impossible between the means of communications connected to each communication network since the communications protocols in the communication network which has connected the action addressee with the communications protocol in the communication network which the addresser is connecting differ, it is 11-1n of each means of communications. The protocol conversion means 3 is connected in between. The protocol conversion means 3 is each communication network A1 -An. It has the buffer memory and the address translation function for connecting the communication network which various kinds of network control protocols, such as connection control and the flow control of a between, and a congestion control, are changed, and also sets up a connection in advance of a communication link, and a connectionless communication network. The example of the protocol conversion means 3 is shown in drawing 6. The control I/O which exchanges the control signal of the input channel 41 which connects the protocol conversion means 3 of drawing 6 with each means of communications, the output channel 42, a transmitting means 44 to perform transmission and reception of data, and the receiving means 43 and the connection control means 8, The protocol translation means 45 which is the subject of protocol conversion, Temporarily data The buffer memory 46 to store, an address translation means 47 for the translation of the address and the address to attach between the communication networks with which address systems differ, and to perform \*\*\*\*, a setting means 48 to set up the protocol which operates with the receiving means 43, the transmitting means 44, and the protocol translation means 45, and various kinds of protocols It consists of protocol storage means 49 to memorize.

[0068] The procedure when performing the communication link through the protocol conversion means 3 of drawing 6 is explained below. When connecting a call, the communications protocol used by the input channel 41 and the output channel 42 from control I/O is directed. The setting means 48 puts the protocol group which is suitable out of various kinds of protocols memorized by the protocol storage means 49 based on these directions on the transmitting means 44, the receiving means 43, and the protocol translation means 45. When transmission speed differs from the case where the methods of a connection setup differ with the communication network connected to each of an input channel and an output channel, it happens that arrival of the data in an input side exceeds the transmission capacity in an output side. When such, data are temporarily stored in buffer memory. Moreover, in the communication network which sets up a connection in advance of a communication link, in case the absolute address of the destination is not added into data in many cases and this is sent out in a connectionless communication network, the absolute address is added with the address translation means 47.

[0069] Next, the example of the connection control means 9 is described. It is constituted by the example of the connection control means 9 shown in drawing 7 from a quality-control means 54 inspect quality, such as distribution of the delay of a resource-management means 53 and service which manages the operating condition of the individual humanity news management tool 52 and the communication link process resources which perform location-registration management of the transmission exchange means 51 with informational high-speed transmission and an informational switching function and a service user, cooperation actuation with a statistical location guess and a service user's schedule function manager, etc., and an information-processing resource etc., or delay, or a transmission error. The operation using the exchange conventionally known as a transmission exchange means the ATM (Asynchronous Transfer Mode) exchange thru/or ATM-LAN, etc. is possible. The standard interface used by these transmission switching methods is used for connection of the connection control means 9 and other means. The implementation using the computer arranged intensively or dispersively and the software carried in it is possible for an individual humanity news management tool, a resource-management means, and a quality control means.

[0070] Drawing 8 is the example of invention configuration of the 2nd of this application 1st. In the example shown in drawing 8, Personal Communication Service equipment 2000 consists of service selection means 62 to choose whether the configuration means shown in drawing 1 and an information storage means 61 to accumulate the information inputted temporarily, and the information storage means 61 are used. Detailed actuation of an example is explained with reference to drawing 8. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 8.

[0071] Do not have the suitable terminal for a communication link -- media differ -- with which a Personal Communication Service user cannot receive communication service. When the communication link in the real time cannot be performed for the reasons of there being a matter to which priority is given over others Based on the input of the instruction from the connection control procedure which a user describes, or a user, the input of the instruction from an addresser, etc., the service selection means 62 transmits the call which received a message to the information storage means 61, and accumulates the information from an addresser in the information storage means 61 temporarily. If it becomes the situation that a service user can communicate, communication link connection will be made to this equipment between a user's terminals, and the information accumulated in the information storage means 61 will be received. In this case, it may be inconvenient to store the information from an addresser as it is by the limit by the classification of a terminal -- the methods of coding differ by the terminal and information addresser whom a user has. In this case, the operation which stores the information which sets up connection between the information recognition means 2 or the media conversion means 7, inputs input into the information recognition means 2 or the media conversion means 7, and is outputted from the information recognition means 2 or the media conversion means 7 in the information storage means 61 is also possible. Conversely, the operation which transmits the information which sets up the communication link connection through the information recognition means 2 or the media conversion means 7 in case the information accumulated in the information storage means 61 is transmitted to a service user, and is outputted from the information recognition means 2 or the media conversion means 7 to a user's terminal is also possible.

[0072] Moreover, in this example, the connection control means 9 and the service selection means 62 carry out based on the instruction input from handshaking a user describes control of connection to be and an addresser with the information storage means 61, and an action addressee etc. For this reason, by describing to handshaking beforehand, a service user can choose the communication link in the real time, and the communication link which accumulates information temporarily according to an addresser, or can make selection according to the situation when carrying out a call in. In this case, momentary are recording of information while performing the information recognition and media conversion which were mentioned above can also be alternatively performed according to a demand of a user. When a setup of the communication link which furthermore accumulates information temporarily is made, an addresser can demand the communication link in the real time from the service selection means 62



according to communicative urgency. A communication link while performing information recognition and media conversion also in this case can carry out according to a demand of an addresser etc.

[0073] Drawing 9 is the example of invention configuration of the 3rd of this application 1st. In the example shown in drawing 9, Personal Communication Service equipment 3000 in the configuration means row shown in drawing 1 The communication link process-resources management tool 71 which investigates the operating condition of the resource concerning [ reach respectively and ] the communications processing in this equipment of two or more communication networks, and memorizes the result, The operating condition of the resource concerning each information processing of the information processor arranged intensively in two or more communication networks and this equipment or dispersively is investigated, and it consists of information processing resource-management means 72 to memorize the result. Detailed actuation of an example is explained with reference to drawing 9. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 9.

[0074] The communication link process-resources management tool 71 is 11-1n of means of communications to various kinds of communication networks connected to this equipment as shown in drawing 2. It minds, the operating condition of communication link process resources is asked periodically, and the response result is memorized. Operation of setting up a test call and investigating whether a setup of a call is possible to the communication network with which information offer is not obtained to an inquiry, is possible. Moreover, the use situation of the resource is periodically asked also to a transmission exchange means 51 to constitute the connection control means 9 and the protocol conversion means 3 in this equipment, and the response result is memorized. On the other hand, information processors in various kinds of information processors and these equipment which are connected to various communication networks, such as the information recognition means 2 and the media conversion means 7, can consider being used in common among two or more service users. The information processing resource-management means 72 is 11-1n of means of communications. It minds, the operating condition of an information processing resource is asked to these information processors, and the response result is memorized. Operation of investigating whether to the information processor with which information offer is not obtained to an inquiry, an experimental processing demand is sent out and it is received is possible. Moreover, the use situation of the resource is asked to the information recognition means 2 and the media conversion means 7 in this equipment, and the response result is memorized. Thus, by setting up the communication link connection after having grasped how many throughputs of various kinds of information processors are using it and considering the operating condition of an information processing resource at the time of a setup of a call, and activation of service, it can judge quickly whether the service which a user demands can be offered above, and an information processing resource can be used effectively, and delay of service can be suppressed. Although the direct channel between the communication link process-resources management tool 71 and the information processing resource-management means 72 is shown by drawing 9, operation through the connection control means 9 is also possible. The operation which furthermore constitutes these management tools as a part of connection control means 9 is also possible.

[0075] Drawing 10 is the example of invention configuration of the 4th of this application 1st. The configuration means which showed Personal Communication Service equipment 4000 to drawing 1 in the example shown in drawing 10, and the automatic call origination means 81 which carries out call origination periodically to the terminal which a Personal Communication Service user has, While the communication network is calling the user to the call, thru/or while the call is connected to a user's terminal, the connectability information on the terminal is collected, and it consists of connectability information gathering means 82 to notify the information to the connectability information storage means 4. Detailed actuation of an example is explained with reference to drawing 10. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 10.

[0076] A service user joins to two or more communication networks, and has the subscriber identifier and terminal linked to each communication network. When the connection control means 9 has a



communication link demand to a service user in such a situation, connectability information is used as a decision ingredient of to which terminal of the user to carry out a communication link setup. Although it is thought appropriate to ask the connectability directly to the communication network with which the information on the connectability of the terminal and communication network which a service user has is offered, to the terminal linked to the communication network which does not offer such information, connectability information is collected in the following procedures.

[0077] The automatic call origination means 81 is 11-1n of every fixed time amount means of communications to the terminal which the user of this equipment has. It minds and a communication link is required. Although a communication network tries the connection to a terminal For example, that is told to a message by the addresser, when the power source of a terminal is not on in the case of the terminal of a land mobile radiotelephone network or a terminal is outside a service area. Or since it calls and a sound is told to an addresser when connection with a terminal is made, the connectability information gathering means 82 changes into connectability information the information on these terminals acquired from a communication network, and makes the connectability information storage means 4 memorize it. In order that the call by this automatic call origination means 81 may not trouble a service user, when it is expected that it is a call in by the automatic call origination means 81, in a terminal side, operation of not sounding a fixed time amount call sound is also possible.

[0078] Drawing 11 is the example of invention configuration of the 5th of this application 1st. In the example shown in drawing 11 , Personal Communication Service equipment 5000 consists of a configuration means shown in drawing 1 , and a connectability signal transduction means 83 to change the status information of a proper into each terminal which a Personal Communication Service user has to the connectability information described systematically. Detailed explanation of an example is given with reference to drawing 11 . In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1 R> 1, and a corresponding part among drawing 11 .

[0079] As a terminal with which this equipment connects, there are various terminals other than the conventional telephone, such as for example, a land mobile radiotelephone machine, a portable telephone, a cordless telephone machine, a PHS terminal, a pager, a multimedia terminal, a personal personal digital assistant, and a workstation. The communication networks with which these terminals connect in each differ, and many conditions of a proper exist according to the class of each communication network and terminal. The connectability signal transduction means 83 changes different status information for every terminal which these communications partners have into the connectability information systematically described to the terminal of all classes, and makes the connectability information storage means 4 memorize it. For example, as connectability information, "connection is impossible" and while [ "while awaiting" ], the status information of the terminal when defining ""under a call and a communication link"" and the example of correspondence of a connectability information storage means are shown in drawing 12 made into the table.

[0080] Drawing 13 is the example of invention configuration of the 6th of this application 1st. In the example shown in drawing 13 , Personal Communication Service equipment 6000 consists of terminal media selection means 91 to choose the terminal and media which try connection first according to the configuration means shown in drawing 1 , and connectability information. Detailed explanation of an example is given with reference to drawing 13 . In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1 , and a corresponding part among drawing 13 .

[0081] A Personal Communication Service user joins to two or more communication networks, it has a terminal linked to each communication network, and the media which can be treated for every terminals of these differ. In such a situation, the terminal media selection means 91 searches for the connectability information for every media of the terminal which the user has in every fixed time amount and the time amount defined beforehand to the connectability information storage means 4. From the obtained result, the terminal media selection means 91 asks for the high terminal and the media of possibility that it is most connectable at the time, and memorizes it. If the notice of a call in to a service user is from the connection control means 9 to the terminal media selection means 91, the terminal media selection means 91 will notify the information on the terminal which should try connection first, and media. The

connection control means 9 makes communication link connection of the terminal and media based on the information.

[0082] Drawing 14 is the example of invention configuration of the 7th of this application 1st. In the example shown in drawing 14, Personal Communication Service equipment 7000 consists of communication link re-connection setting means 92 to reset the communication link which changes the media or means of communications which communicates with a service user, when the connectability of the configuration means shown in drawing 1, and the terminal and communication network which a service user has during a communication link changes. Detailed explanation of an example is given with reference to drawing 14. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 14.

[0083] The connectability information on the terminal and communication network which a Personal Communication Service user has is collected periodically, and when there is a certain modification, the information memorized by the connectability information storage means 4 is updated. When reservation of the communication link process resources for the terminal under communication link moving and continuing the communication link or an information processing resource becomes difficult, it negotiates among the addressees whose communication link re-connection setting means 92 are an addresser and a service user, and a communication link is set up again. The operation which displays on the terminal (an addresser's terminal 93 and an addressee's terminal 94) in which a user has the communication link process resources whose offer is possible in a communication network side at this time, and an information processing resource, and obtains the directions from a user is sufficient. The example of the procedure of setting a communication link as below again is described.

[0084] In the situation which can continue a communication link by lowering the band of an information transmission rather than the communication link already performed, continuation of the communication link by the fall of a band is proposed. When what has compressibility high as a decoder of information source coding of a terminal for the fall of a band is mounted and it can satisfy a user's demand quality, the band of an information transmission is lowered by switching to the algorithm, and a communication link is continued. A concrete example is raised and described about this procedure. Although the communication link which the connectability with a communication network changed and the terminal which was performing the standard dynamic-image communication link for MPEG 2 was performing till then cannot be performed In the situation which can continue a communication link if it is the standard dynamic-image communication link for MPEG4 which lowered the band of an information transmission When satisfied with a user's terminal of the quality of service which whether the standard decryption means for MPEG4 being mounted investigates and which it is mounted and the user is demanding, the switch to the dynamic-image communication link by MPEG4 is directed to an addresser and an addressee, and a communication link is continued. When the addresser does not mount the standard coding means for MPEG4 at this time, the communication link connection which directs the media conversion from MPEG 2 to MPEG4 for the media conversion means 7 in this equipment, and minds the media conversion means 7 is set up.

[0085] moreover, by the service user having an alphabetic character terminal connectable with another communication network, when it becomes impossible to make connection with a communication network during the communication link of an audio terminal, when communicative urgency is high After switching to the means of communications to which the means of communications connected with a user is made as for connection to the communication network of an alphabetic character terminal connected, connection with the information recognition means 2 in this equipment is made. The appearance described previously is made to recognize voice and it changes into a character code, and it switches so that this character code may be sent to a user's terminal through a communication network.

[0086] If it is going to continue a communication link in the example described above also after connectability changes, when it stops fulfilling a service user's demand quality and the service user is not demanding the sex instancy, connection is set up to an information storage means, and it directs so that the information from an addresser may be accumulated temporarily. Among service users, if a communication link by the media can be performed, communication link connection will be made again,

and the information accumulated previously is sent out.

[0087] Drawing 15 is the example of invention configuration of the 8th of this application 1st. In the example shown in drawing 15, Personal Communication Service equipment 8000 consists of service request condition storage means 101 to memorize service request conditions, such as the permeability of the cost concerning the instancy nature or the connection, and the communication link of connection which the configuration means shown in drawing 1 and a Personal Communication Service user demand, or information, or those combination. Detailed explanation of an example is given with reference to drawing 15. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 15.

[0088] The service user makes the service request condition storage means 101 memorize beforehand the requirements about services, such as whenever [ about the connection at the time of carrying out the sending and receiving of the call / demand / of the permeability of whenever / sexual demand /, informational media to connect, and information instancy ], to the identifier of the partner of a sending-and-receiving call, the informational contents, etc. The connection control means 9 makes connection to the optimal terminal and media with reference to this service request condition storage means 101, judging from the identifier of the sending-and-receiving partner of that call, the informational contents, etc., when there is an arrival-and-departure call to a user.

[0089] For example, although the land mobile radiotelephone of cost is generally more expensive when the message using the message and land mobile radiotelephone using a general telephone is compared. When trying connection with a service user and connection by general telephone cannot be performed, and the service user has a land mobile radiotelephone terminal, the purport which may be high makes connection using a land mobile radiotelephone about the call which has carried out description to the service request condition storage means 101. When connection by general telephone cannot be performed on the contrary, and the service user has a pager terminal, generally the purport by which it is not permitted that communication link cost is high transmits a message using a pager with low communication link cost about the call which has carried out description to the service request condition storage means 101. Implementation of transmitting, after accumulating the information in the information storage means 102 temporarily and message-izing it about the communication link with the high demand to informational permeability, such as having forbidden media conversion furthermore or restricting media conversion, when real-time transmission by the media cannot be performed and the demand about the instancy nature of the communication link is low is possible.

[0090] Drawing 16 is the example of invention configuration of the 9th of this application 1st. The configuration means which showed Personal Communication Service equipment 9000 to drawing 1 in the example shown in drawing 16, and an information storage means 111 to accumulate the information inputted temporarily. It consists of information extract means 112 which take out the information on some fields containing a part of fields or specific keywords specified by a service user out of the structure information thru/or the semantic information recognized by the information inputted or the information recognition means 2, or the information accumulated in the information storage means 111. The detail of an example is explained with reference to drawing 16. In addition, the part shown with the same sign as the sign of drawing 1 shows it of drawing 1, and a corresponding part among drawing 16 R> 6.

[0091] The case where a voice-told message is accumulated is explained to an example about the example of this invention. 11-1n of means of communications While inputting and accumulating the inputted voice-told message in the information storage means 111, the same message is made to recognize with the information recognition means 2, and it changes into text. The information extract means 112 extracts the word which serves as a keyword from this text, and accumulates independently the sentence in the field beforehand appointed before and behind that in the information storage means 111 as a header. Or the aliquot of the head of the text acquired according to recognition is similarly accumulated in the information storage means 111 as a header. And this header information is sent out to a user's terminal to the demand from a user. The delimiter between each information is set to header information by the information storage means 111, and a user can search a header one after another. The

outline of these messages can be grasped in a short time by carrying out page turning over of that header, when many voice-told messages are accumulated by this example. It becomes easy to choose and hear needed information, urgent information, etc. from a user.

[0092] Drawing 17 is the block diagram showing the outline of the recognition system concerning the 1st example of the 1st configuration applied to the Personal Communication Service equipment of invention of this application 2nd. The recognition system of this example is constituted including the physical information recognition server 201, the common information database 202 which has accumulated the information about the semantic content contained in physical information common to all the users of this recognition system, the information processing terminal 203 which each at least one or more users possess, and the communication network 204 which transmits information. Moreover, the information processing terminal 203 is constituted including the personal data base 205 which has accumulated the additional individual humanity news for every user to the information accumulated in the common information database 202, the transmitter 206 which transmits information, and the input unit 207 into which a user inputs information.

[0093] Next, actuation of the recognition system constituted as mentioned above is explained. With the transmitter 206 of the information processing terminal 203, a user transmits a demand of recognition of physical information to the physical information recognition server 201 through a communication network 204. After that, this user inputs physical information with an input unit 207, and transmits to the physical information recognition server 201 through a communication network 204 with a transmitter 206. From the common information database 202 and the personal data base 205 of this user's information processing terminal 203, the physical information recognition server 201 receives information required for recognition of physical information via a communication network 204, and recognizes physical information using this information. It becomes possible to recognize physical information suitable for each user by the above actuation.

[0094] Drawing 18 is the block diagram showing the outline of the recognition system concerning the 2nd example of the 1st configuration applied to the Personal Communication Service equipment of invention of this application 2nd. The recognition system of this example is a recognition system which recognizes a user's action from the voice and the dynamic image which were inputted. The action recognition server 211 which recognizes the input as which this system was inputted by voice and the dynamic image, The action information database 212 which has accumulated the mapping information from input common to all the users of this recognition system to the action information which shows action, It is constituted including the individual humanity news card 213 which each at least one or more users possess, at least one or more information processing terminals 214, and the communication network 215 which transmits information. The additional individual humanity news for every user to the information accumulated in the action information database 212 is accumulated in the individual humanity news processing card 213. Moreover, the information processing terminal 214 is constituted including the transmitter 216 which transmits information, the receiver A217 which receives information through a communication network 215, the input unit 218 into which a user inputs information, the output unit 219 which outputs information to a user, and the receiver B220 which receives information from the individual humanity news card 213.

[0095] Next, actuation of the recognition system constituted as mentioned above is explained. The information processing terminal 214 transmits the input which was inputted by the input unit 218 and which consists of this recognition system's voice and dynamic image of a user to the action recognition server 211 through a communication network 215 with a transmitter 216. Moreover, the information processing terminal 214 receives this user's individual humanity news with a receiver B220 from the individual humanity news card 213. From the action information database 212 and the information processing terminal 214, via a communication network 215, the action recognition server 211 receives information required for action recognition, and performs action recognition using this information. The action recognition server 211 transmits a recognition result to the information processing terminal 214 through a communication network 215. The information processing terminal 214 receives this recognition result with a receiver A217, and outputs it with an output unit 219. It becomes possible to

perform action recognition suitable for each user by the above actuation.

[0096] Drawing 19 is the block diagram showing the outline of the recognition system concerning the example of the 2nd configuration applied to the Personal Communication Service equipment of invention of this application 2nd. The recognition system of this example is constituted including the speech recognition server 221 which recognizes the phoneme information on the inputted voice, the phoneme information database 222 which has accumulated the mapping information from a voice wave common to all the users of this recognition system to phoneme information, the information processing terminal 223 which each at least one or more users possess, and the communication network 224 which transmits information. Moreover, the information processing terminal 223 is constituted including the personal data base 225 which has accumulated the additional individual humanity news for every user to the information accumulated in the phoneme information database, the transmitter 226 which transmits information, and the input unit 227 into which a user inputs information.

[0097] Next, actuation of the recognition system constituted as mentioned above is explained. With the transmitter 226 of the information processing terminal 223, a user transmits the demand of speech recognition to the speech recognition server 221 through a communication network 224. After that, this user inputs a voice wave with an input unit 227, and transmits to the speech recognition server 221 through a communication network 224 with a transmitter 226. From the phoneme information database 222 and the personal data base 225 of this user's information processing terminal 223, the speech recognition server 221 receives information required for speech recognition via a communication network 224, and performs speech recognition using this information. It becomes possible to perform speech recognition suitable for each user by the above actuation.

[0098] Drawing 20 is the block diagram showing the outline of the recognition system concerning the example of the 3rd configuration applied to the Personal Communication Service equipment of invention of this application 2nd. The recognition system of this example is constituted including the character recognition server 231 which recognizes the structure of the inputted handwriting alphabetic character, the text database 232 which has accumulated the mapping information from handwriting input common to all the users of this recognition system to an alphabetic character, the information processing terminal 233 which each at least one or more users possess, and the communication network 234 which transmits information. Moreover, the information processing terminal 233 is constituted including the personal data base 235 which has accumulated the additional individual humanity news for every user to the information accumulated in the text database 232, the transmitter 236 which transmits information, and the input unit 237 into which a user inputs information.

[0099] Next, actuation of the recognition system constituted as mentioned above is explained. With the transmitter 236 of the information processing terminal 233, a user transmits the demand of character recognition to the character recognition server 231 through a communication network 234. After that, this user inputs a handwriting alphabetic character with an input unit 237, and transmits to the character recognition server 231 through a communication network 234 with a transmitter 236. From the text database 232 and the personal data base 235 of this user's information processing terminal 233, the character recognition server 231 receives information required for handwriting recognition via a communication network 234, and performs handwriting recognition. It is possible to perform character recognition which was suitable for each user with the above actuation.

[0100] Drawing 21 is the block diagram showing the outline of the media conversion system concerning the example of the 5th configuration applied to the Personal Communication Service equipment of invention of this application 2nd. The media conversion system of this example is constituted including the speech recognition server 241, the phoneme information database 242, the text database 243, the media conversion server 244 changed into text from the result of speech recognition, the information processing terminal 245 which each at least one or more users possess, and the communication network 246 which transmits information. Moreover, the information processing terminal 245 is constituted including the personal data base 253 which has accumulated the additional alphabetic character individual humanity news 252 for every user to the additional phoneme individual humanity news 251 for every user to the information accumulated in the phoneme information database 242, and the

information accumulated in the text database 243, the transmitter 254, the receiver 255, the input unit 256, and the output unit 257, as shown in the block diagram of drawing 22 .

[0101] Next, actuation of the media conversion system constituted as mentioned above is explained. Here, a transmitting person explains the actuation in the case of transmitting information to an addressee's information processing terminal B from the information processing terminal A. A transmitting person inputs a voice wave with the input unit 256 of the information processing terminal A, and transmits to the speech recognition server 241 through a communication network 246 with a transmitter 254. From the phoneme individual humanity news 251 of the phoneme information database 242 and the personal data base 253 within the information processing terminal A, this speech recognition server receives information required for speech recognition via a communication network 246, and performs speech recognition. The speech recognition server 241 transmits a recognition result to the media conversion server 244 through a communication network 246. The media conversion server 244 is accessed to the alphabetic character individual humanity news 252 of the text database 243 and the personal data base 253 within this transmitting person's information processing terminal A via a communication network 246, and asks it for a media conversion result from this recognition result. This media conversion server 244 transmits to the information processing terminal B via a communication network 246. The information processing terminal B receives this media conversion result with a receiver 255, and outputs to an addressee side with an output unit 257. The above actuation performs speech recognition which was suitable for the transmitting person in a transmitting person's voice, the result is changed into text, and it becomes possible to output to the output unit of an addressee's information processing terminal in the alphabetic character similar to a transmitting person's alphabetic character.

[0102] Drawing 23 is the block diagram showing the outline of the media conversion system concerning the example of the configuration of the 6th of the Personal Communication Service equipment of invention of this application 2nd. The media conversion system of this example is constituted instead of the media conversion server 244 including the media conversion server 262 changed into speech information from the result of character recognition instead of the speech recognition server 241 in the block diagram of drawing 21 , including the character recognition server 261. In addition, the part shown with the same sign as the sign of drawing 21 shows it of drawing 21 , and a corresponding part. Moreover, as shown in drawing 22 , the information processing terminal 245 is constituted.

[0103] Next, actuation of the media conversion system constituted as mentioned above is explained. Here, a transmitting person explains the actuation in the case of transmitting information to an addressee's information processing terminal B from the information processing terminal A. A transmitting person inputs a handwriting alphabetic character with the input unit 256 of the information processing terminal A, and transmits to the character recognition server 261 through a communication network 246 with a transmitter 254. From the alphabetic character individual humanity news 252 of the text database 243 and the personal data base 253 within the information processing terminal A, this character recognition server receives information required for handwriting recognition via a communication network 246, and performs handwriting recognition. The character recognition server 261 transmits a recognition result to the media conversion server 262 through a communication network 246. The media conversion server 262 is accessed to the phoneme individual humanity news 251 of the phoneme information database 242 and the personal data base 253 within this transmitting person's information processing terminal A via a communication network 246, and asks it for a media conversion result from this recognition result. This media conversion server 262 transmits to the information processing terminal B via a communication network 246. The information processing terminal B receives this media conversion result with a receiver 255, and outputs to an addressee side with an output unit 257. The above actuation performs character recognition which was suitable for the transmitting person in a transmitting person's handwriting alphabetic character, the result is changed into speech information, and it becomes possible to output to the output unit of an addressee's information processing terminal with the voice similar to a transmitting person's voice.

[0104] Drawing 24 is the block diagram showing the outline of the media conversion system concerning

the example of the 4th configuration applied to the Personal Communication Service equipment of invention of this application 2nd. The media conversion system of this example is constituted including the physical information recognition server 271, the common information database 272, the media conversion server 273 that changes the recognition result of physical information into the information it is easier for this addressee that receives a result to understand, the information processing terminal 274 which each at least one or more users possess, and the communication network 275 which transmits information. Moreover, the information processing terminal 274 is constituted including the personal data base 282 which has accumulated the lexical information 281 for every user, the transmitter 283, the receiver 284, the input unit 285, and the output unit 286, as shown in the block diagram of drawing 25.

[0105] Next, actuation of the media conversion system constituted as mentioned above is explained. Here, a transmitting person explains the actuation in the case of transmitting information to an addressee's information processing terminal B from the information processing terminal A. A transmitting person inputs physical information with the input unit 285 of the information processing terminal A, and transmits to the physical information recognition server 271 through a communication network 275 with a transmitter 283. From the lexical information 281 on the common information database 272 and the personal data base 282 within the information processing terminal A, this physical information recognition server receives information required for recognition of physical information via a communication network 275, and recognizes physical information. The physical information recognition server 271 transmits a recognition result to the media conversion server 273 through a communication network 275. The media conversion server 273 uses the lexical information 281 on the personal data base 282 within an addressee's information processing terminal B274 via a communication network 275, changes into the information it is easier for an addressee to understand this recognition result to be, and searches for a media conversion result. This media conversion server 273 transmits this media conversion result to the information processing terminal B via a communication network 275. The information processing terminal B receives this media conversion result with a receiver 284, and outputs to an addressee side with an output unit 286. The physical information which a transmitting person transmits is changed into the information it is easier for an addressee to understand, and the above actuation enables it to output to the output unit of an information processing terminal.

[0106]

[Effect of the Invention] A flexible setup of advanced addition functions, such as connection control of the call which carries out sending and receiving like according to this invention which explained above, and media conversion, information recognition, can carry out to a Personal Communication Service user subject.

[0107] Moreover, construction of the recognition system suitable for each user is attained with the recognition system of this invention. Moreover, the media conversion system of this invention enables it to output physical information without sense of incongruity for the user of the output side of physical information.

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[Translation done.]



**\* NOTICES \***

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the example of invention configuration of the 1st of this application 1st.

[Drawing 2] It is drawing showing an example of the topology of Personal Communication Service equipment and various communication networks.

[Drawing 3] It is drawing showing an example which performs connection control based on schedule data in the 1st configuration of invention of this application 1st.

[Drawing 4] It is drawing showing an example which performs a communication link at the terminals which cannot treat the same media information in the 1st configuration of invention of this application 1st.

[Drawing 5] It is drawing showing an example which performs the communication link which used the information recognition means in the 1st configuration of invention of this application 1st.

[Drawing 6] It is drawing showing the example of a protocol conversion means.

[Drawing 7] It is drawing showing the example of a connection control means.

[Drawing 8] It is drawing showing the example of invention configuration of the 2nd of this application 1st.

[Drawing 9] It is drawing showing the example of invention configuration of the 3rd of this application 1st.

[Drawing 10] It is drawing showing the example of invention configuration of the 4th of this application 1st.

[Drawing 11] It is drawing showing the example of invention configuration of the 5th of this application 1st.

[Drawing 12] It is drawing which made the table the example [ information / status information and / connectability ] of correspondence.

[Drawing 13] It is drawing showing the example of invention configuration of the 6th of this application 1st.

[Drawing 14] It is drawing showing the example of invention configuration of the 7th of this application 1st.

[Drawing 15] It is drawing showing the example of invention configuration of the 8th of this application 1st.

[Drawing 16] It is drawing showing the example of invention configuration of the 9th of this application 1st.

[Drawing 17] It is drawing showing the 1st example of invention configuration of the 1st of this application 2nd.

[Drawing 18] It is drawing showing the 2nd example of invention configuration of the 1st of this application 2nd.

[Drawing 19] It is drawing showing the example of invention configuration of the 2nd of this application 2nd.



[Drawing 20] It is drawing showing the example of invention configuration of the 3rd of this application 2nd.

[Drawing 21] It is drawing showing the example of invention configuration of the 5th of this application 2nd.

[Drawing 22] It is drawing showing the example of an information processing terminal.

[Drawing 23] It is drawing showing the example of invention configuration of the 6th of this application 2nd.

[Drawing 24] It is drawing showing the example of invention configuration of the 4th of this application 2nd.

[Drawing 25] It is drawing showing the example of an information processing terminal.

[Drawing 26] It is drawing showing an example of the configuration of conventional Personal Communication Service equipment.

[Drawing 27] It is drawing showing an example in the case of communicating at the terminals which cannot treat information on the same media in the former.

[Drawing 28] It is drawing showing an example of the configuration of the conventional automatic telephone answering set.

[Drawing 29] It is drawing showing an example of the configuration of the conventional automatic telephone system.

[Drawing 30] It is drawing showing are recording of the conventional voice-told message, and an example of the configuration of a regenerative apparatus.

[Drawing 31] It is drawing showing an example of the conventional recognition structure of a system.

[Drawing 32] It is drawing showing other examples of the conventional recognition structure of a system.

[Description of Notations]

1 Means of Communications

2 Information Recognition Means

3 Protocol Conversion Means

4 Connectability Information Storage Means

5 Identifier Conversion Means

6 Communication Link Selection Means

7 Media Conversion Means

8 Handshaking Storage Means

9 Connection Control Means

10 Electronic Notebook

201 Physical Information Recognition Server

202 Common Information Database

203 Information Processing Terminal

204 Communication Network

205 Personal Data Base

206 Transmitter

207 Input Unit

1000-9000 Personal Communication Service equipment

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[Translation done.]

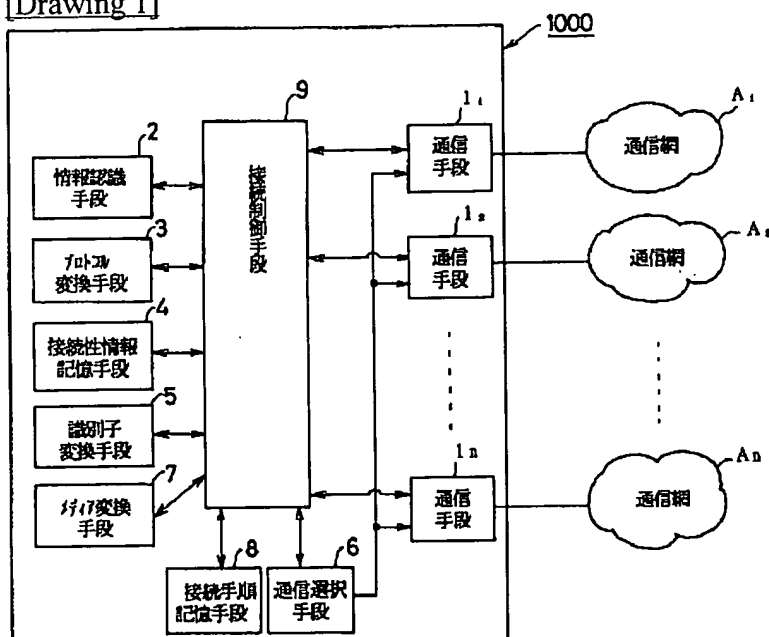
## \* NOTICES \*

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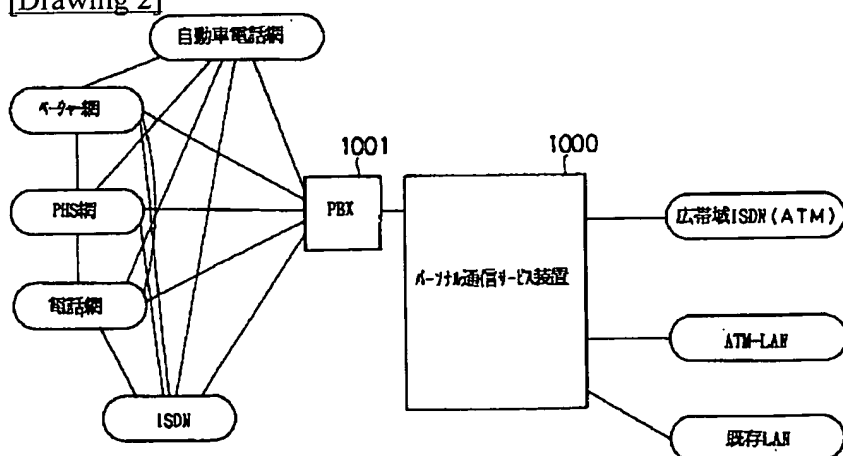
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

[Drawing 1]



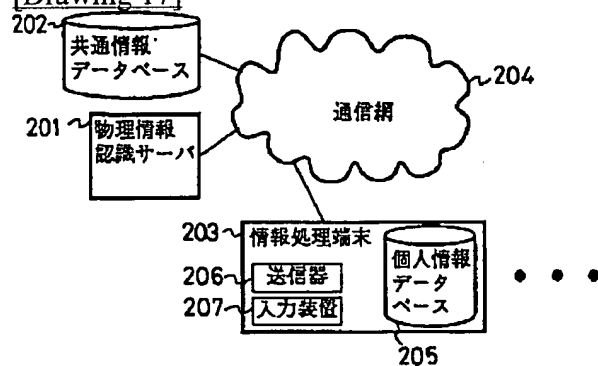
[Drawing 2]



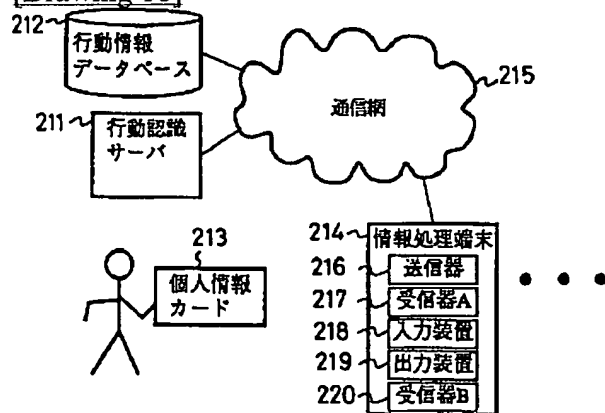
[Drawing 12]

端末	電話網の電話機	LANのノード
「接続不可」	端末の接続無し	電源OFF 利用者がサインしていない
「待受中」	他の状態以外	他の状態以外
「呼出し中」	呼出し中	データ送出中
「通信中」	通話状態	ネットワーク接続 TCP/IP接続

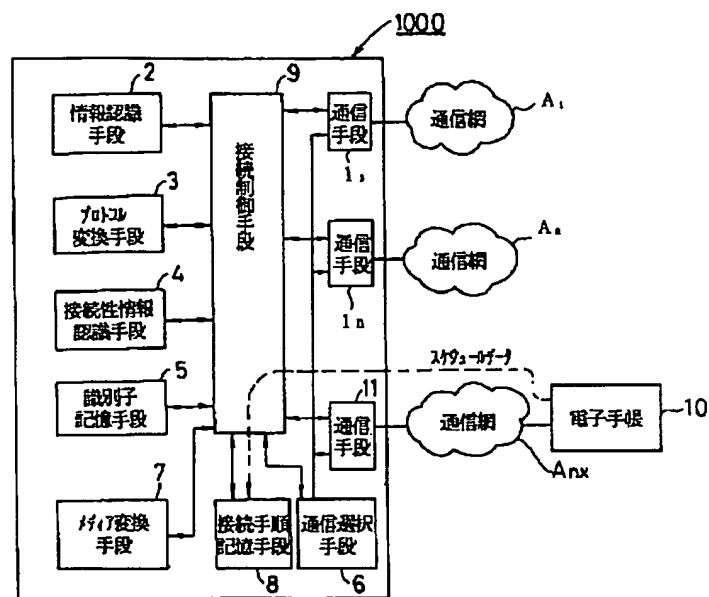
[Drawing 17]



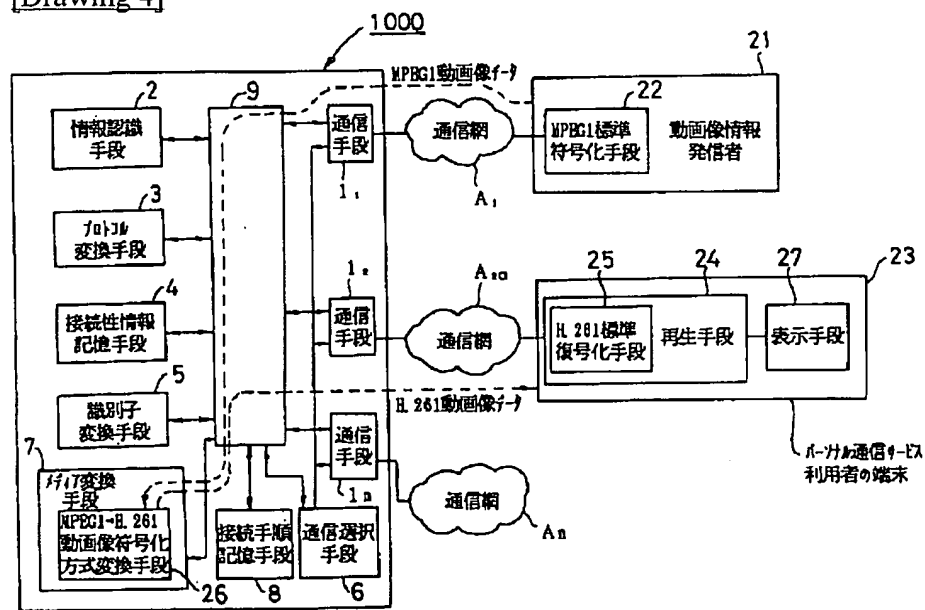
[Drawing 18]



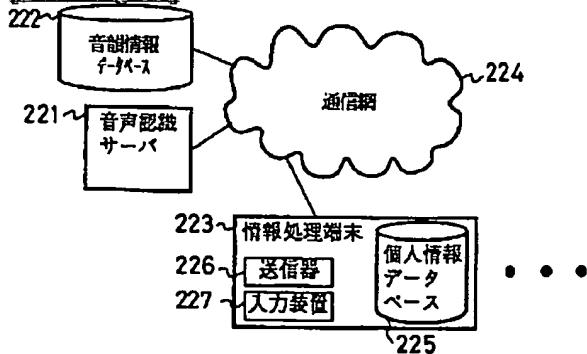
[Drawing 3]



[Drawing 4]

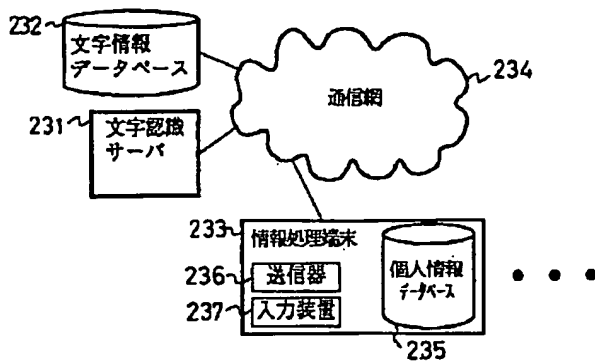


[Drawing 19]

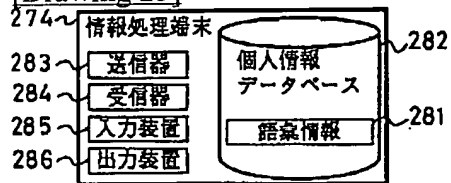


[Drawing 20]

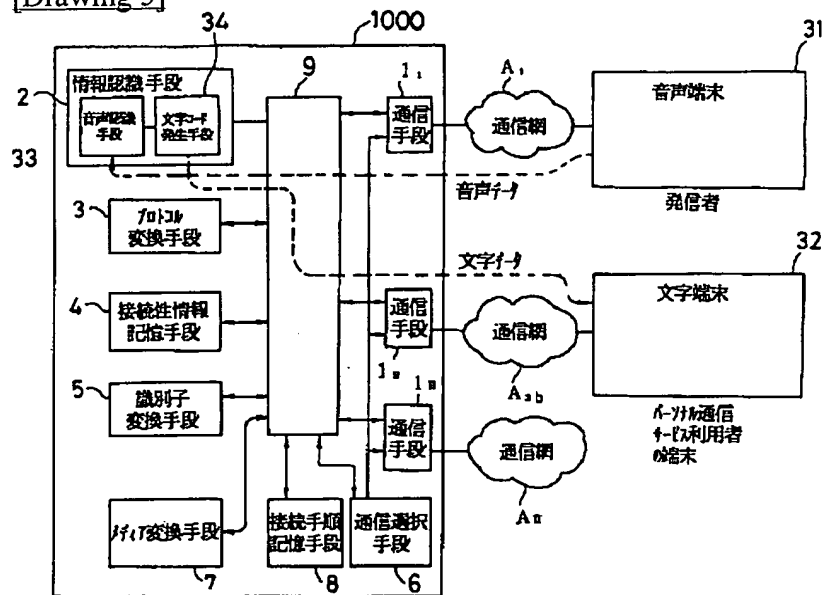
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[Drawing 25]

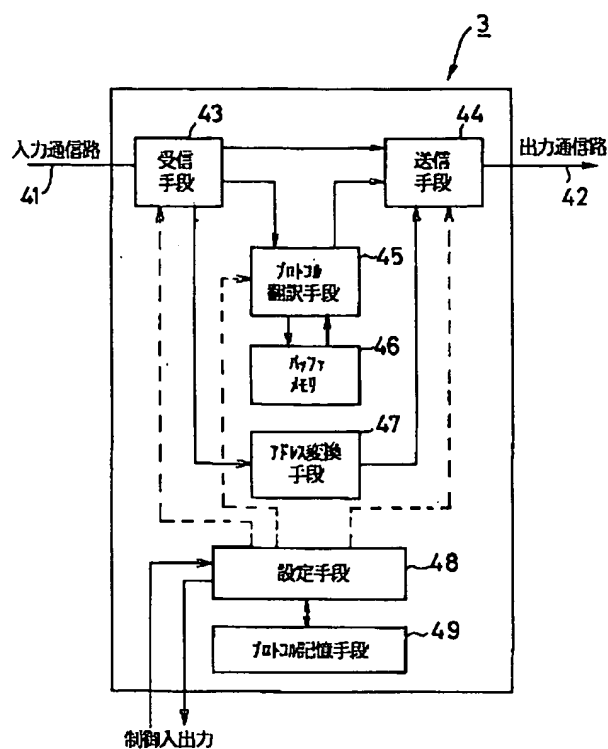


[Drawing 5]

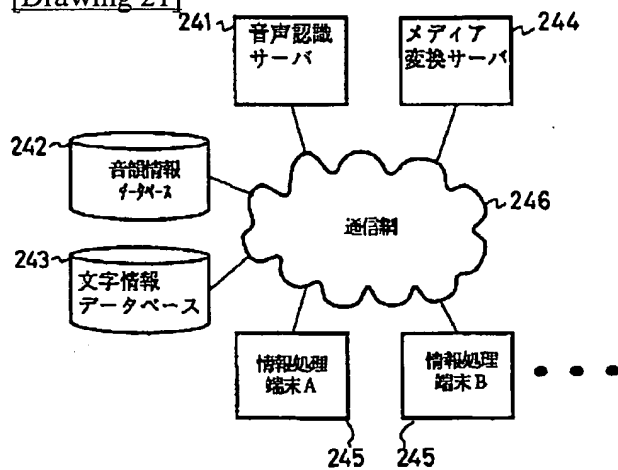


[Drawing 6]

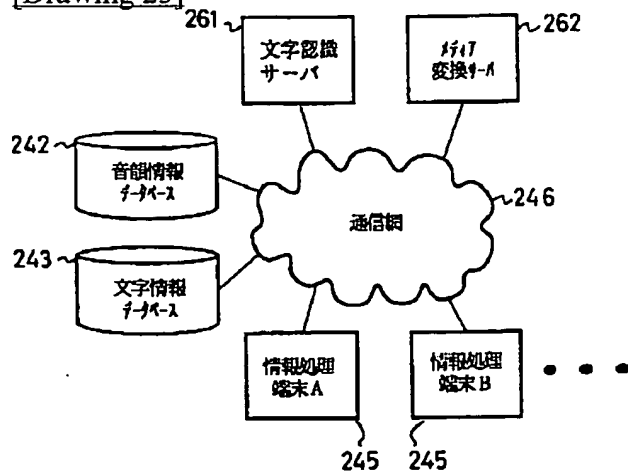
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[Drawing 21]

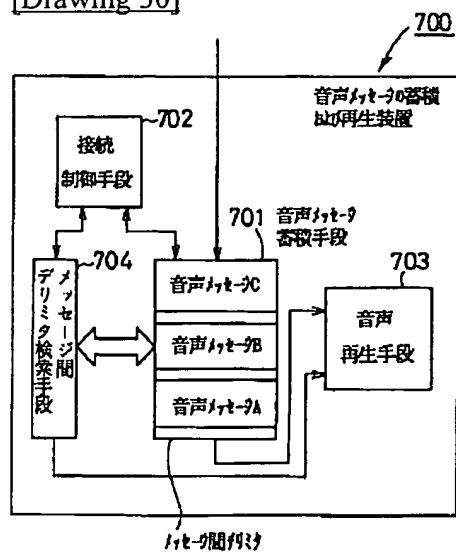


[Drawing 23]

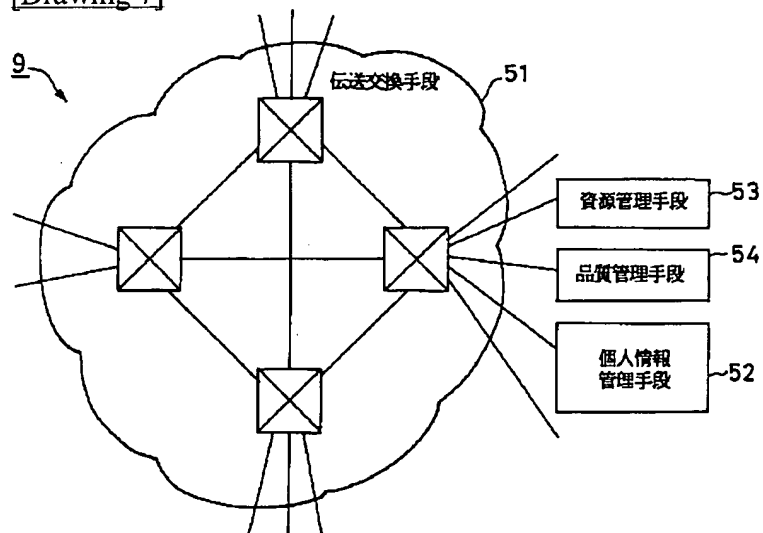


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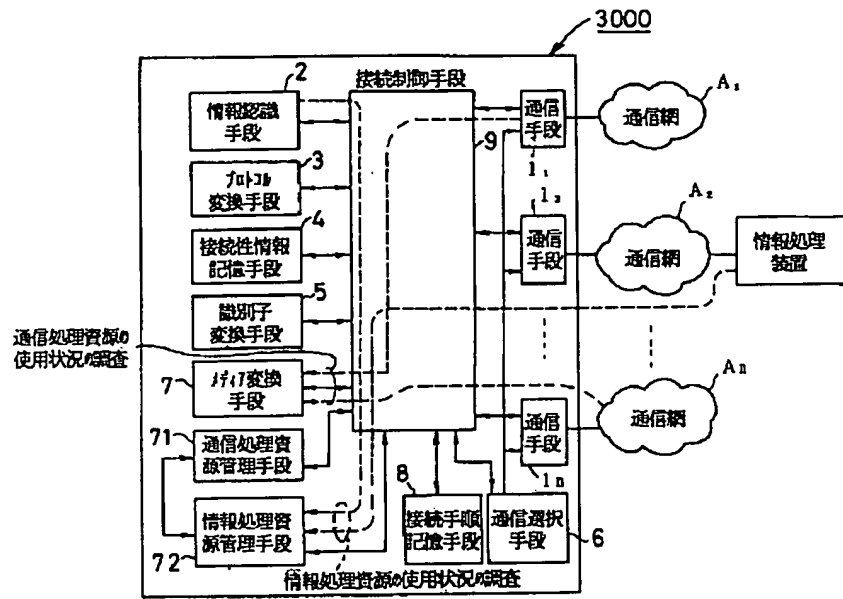
[Drawing 30]



[Drawing 7]

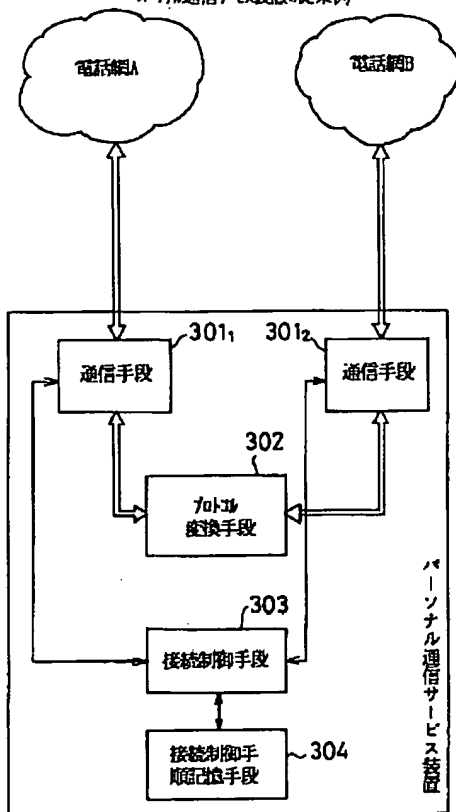


[Drawing 9]



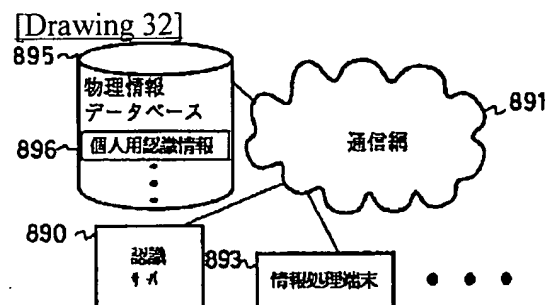
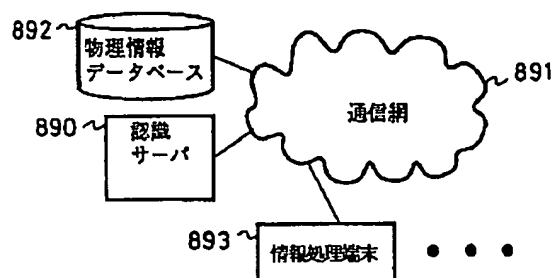
[Drawing 26]

A-7の通信手段装置の従来例



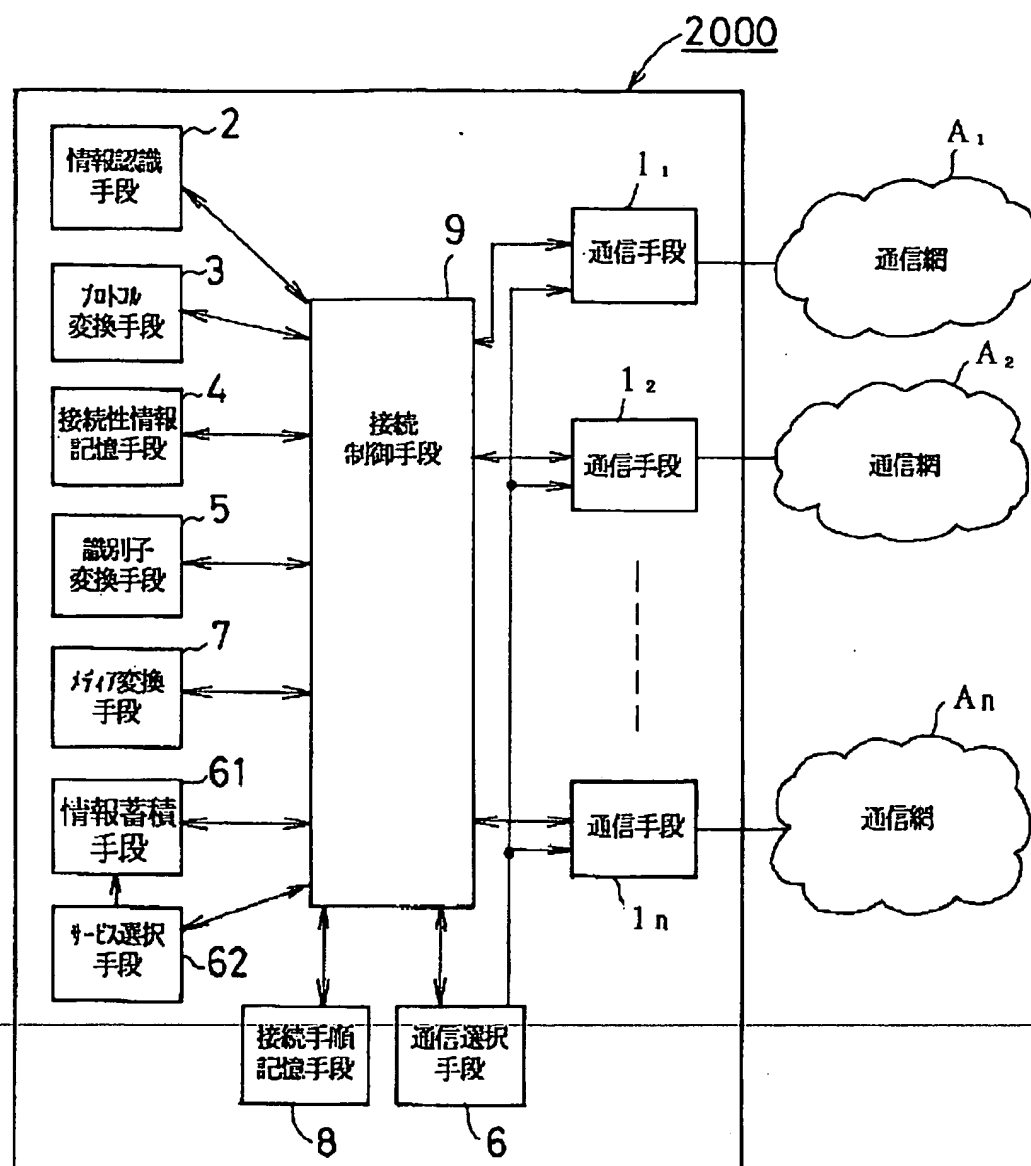
[Drawing 31]



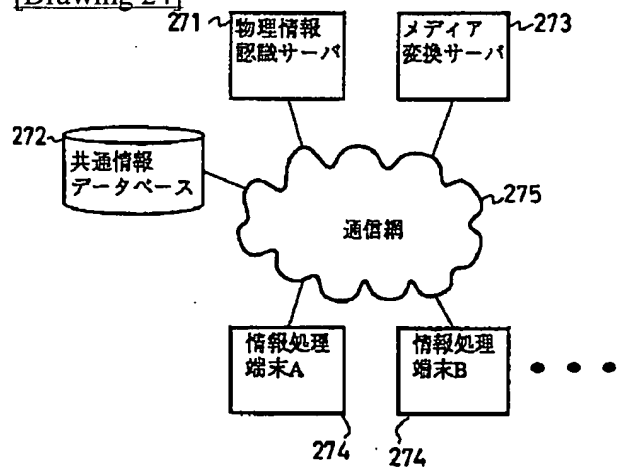


[Drawing 8]

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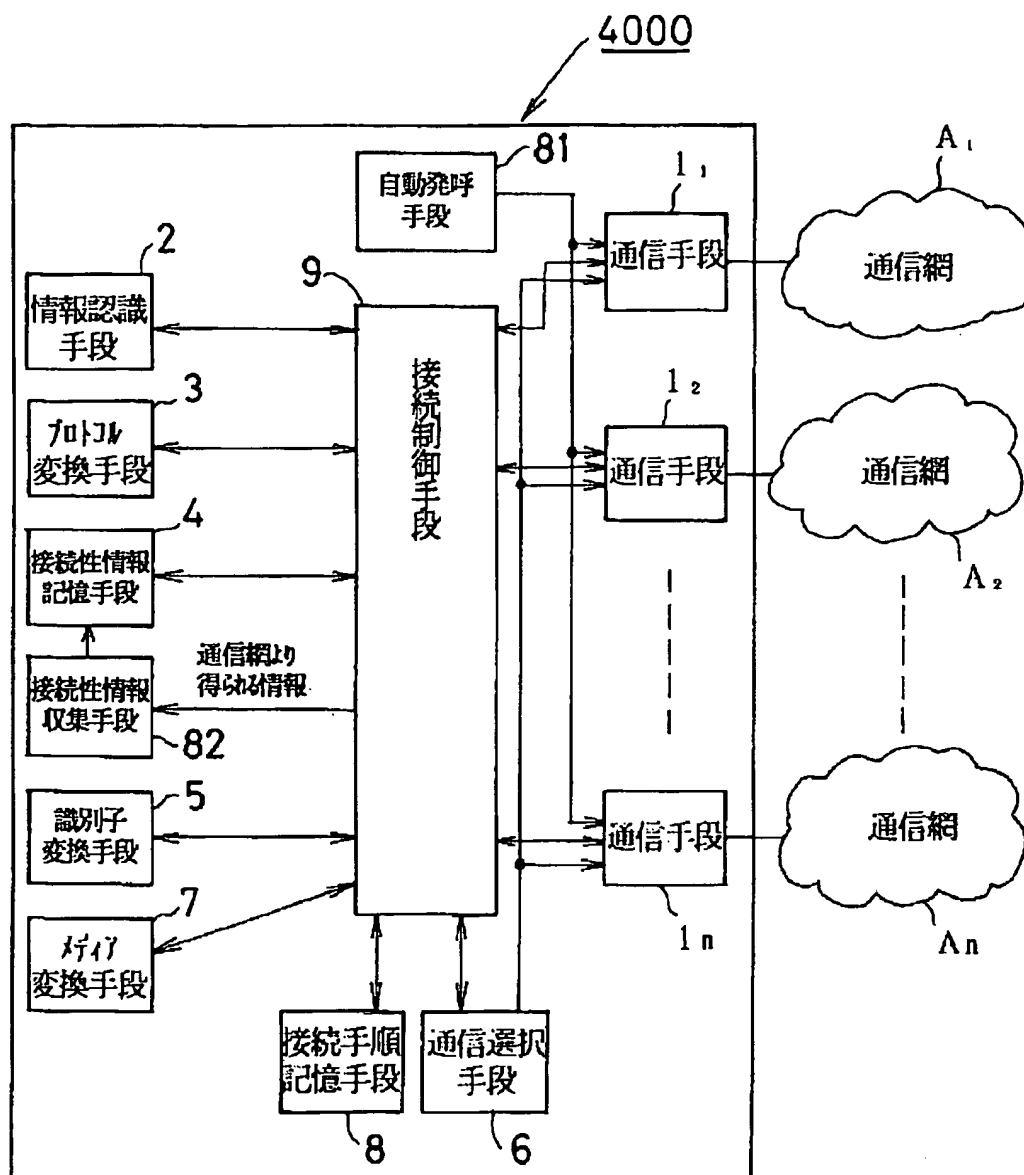


[Drawing 24]

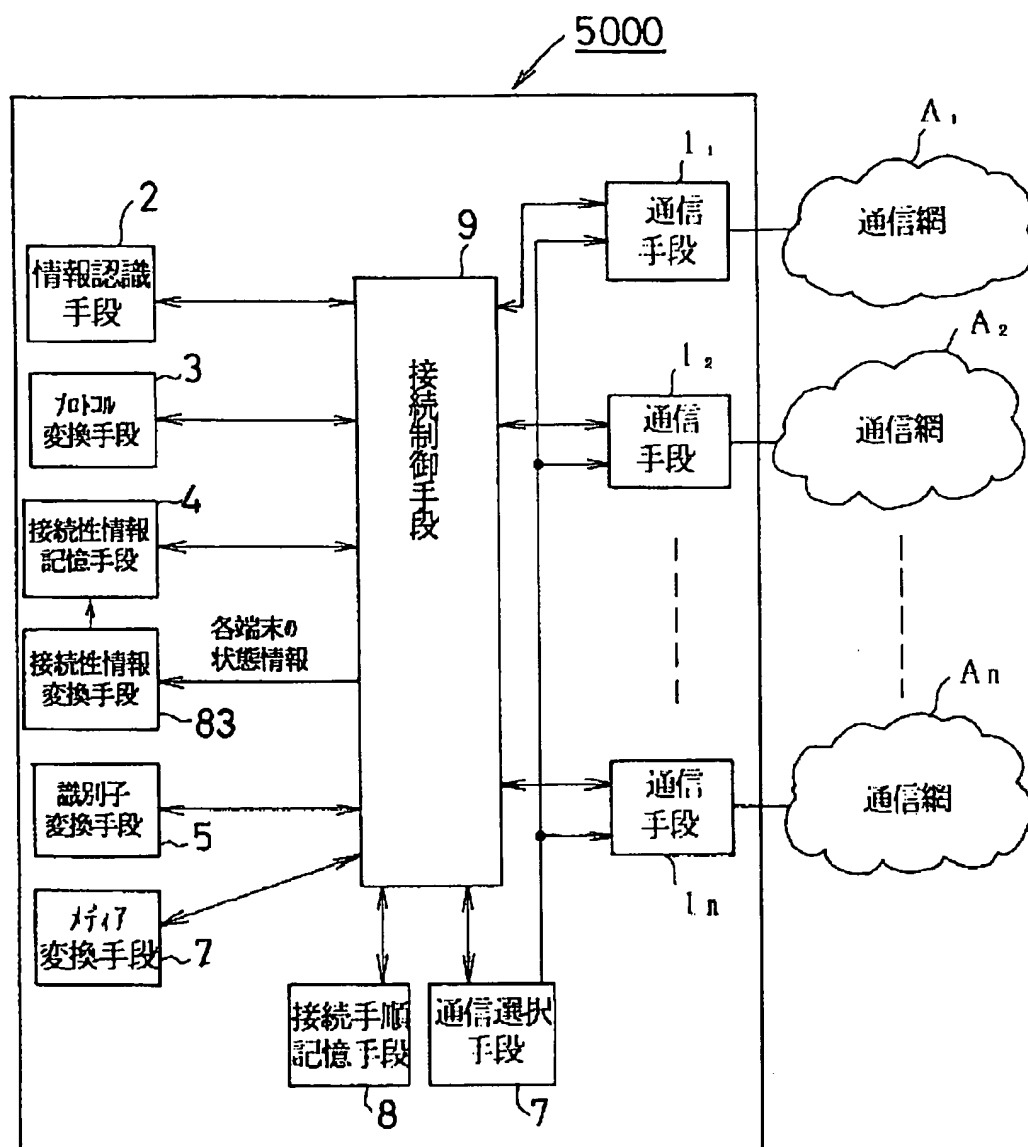


[Drawing 10]

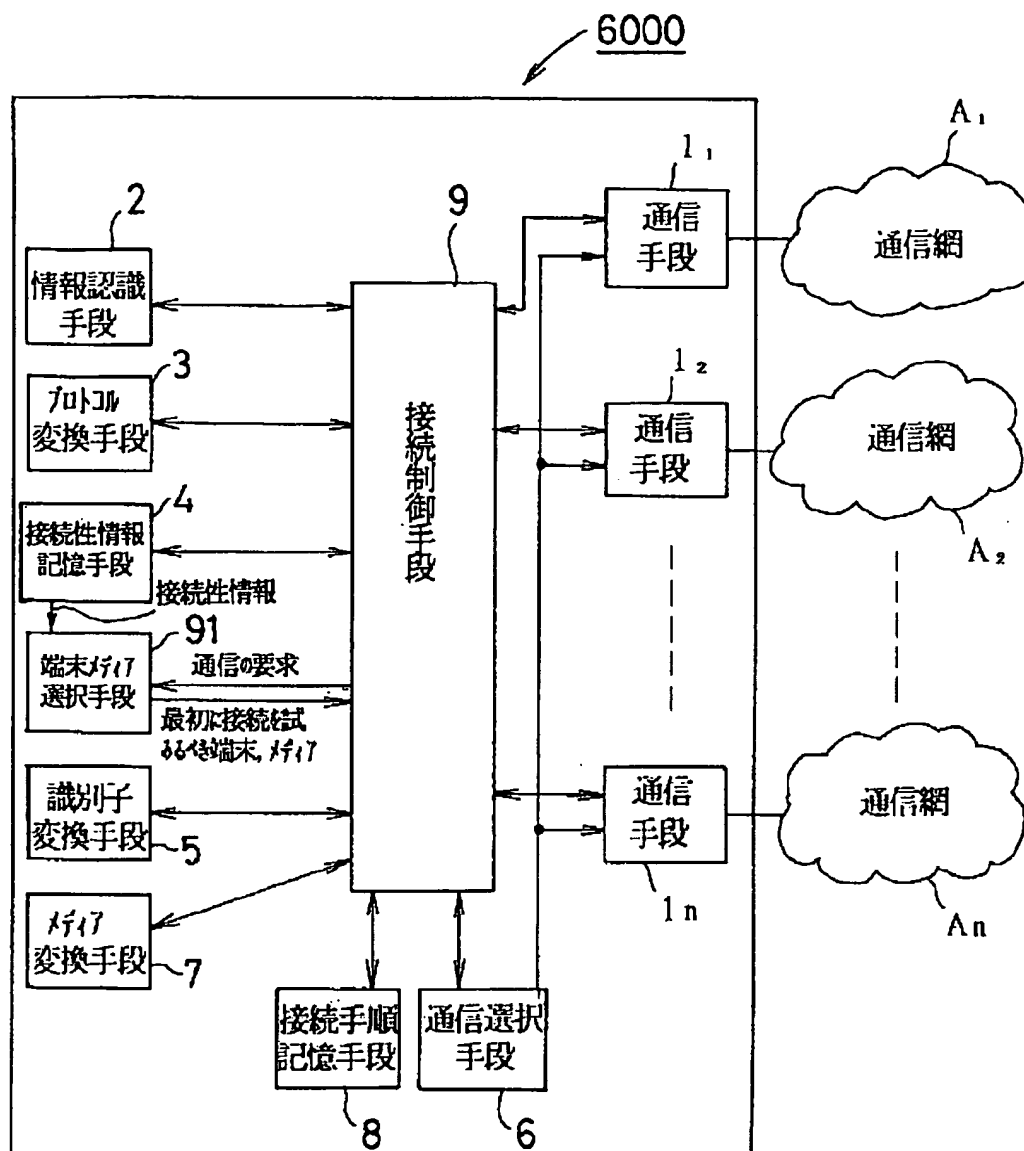
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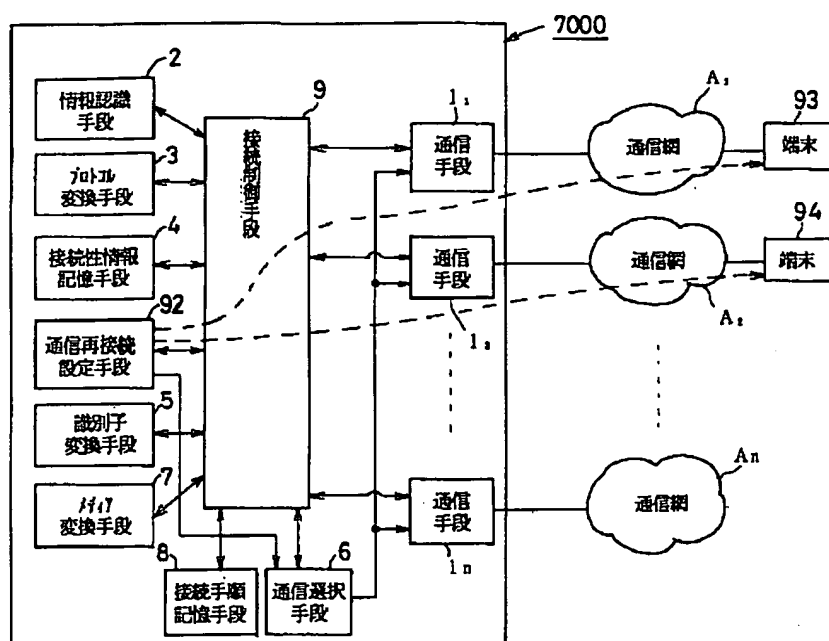
[Drawing 11]



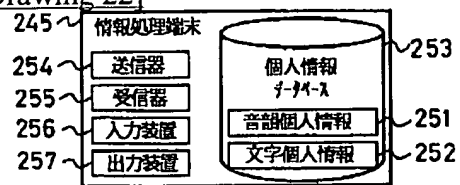
[Drawing 13]



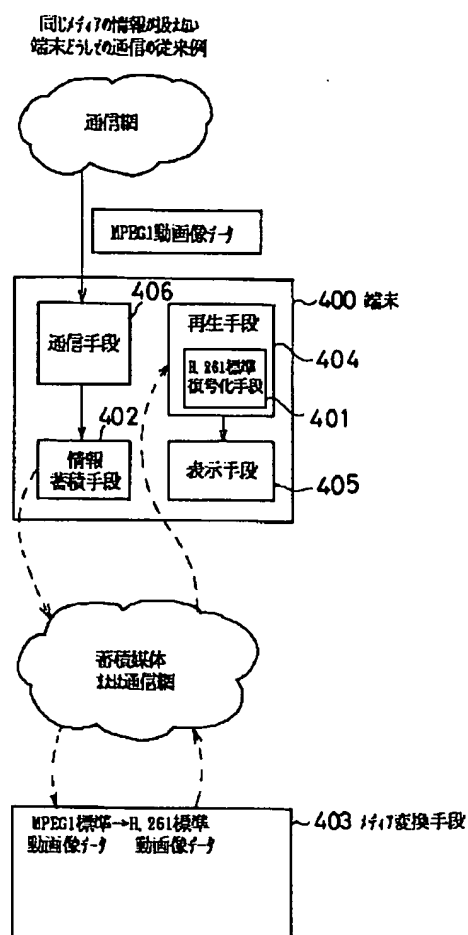
[Drawing 14]



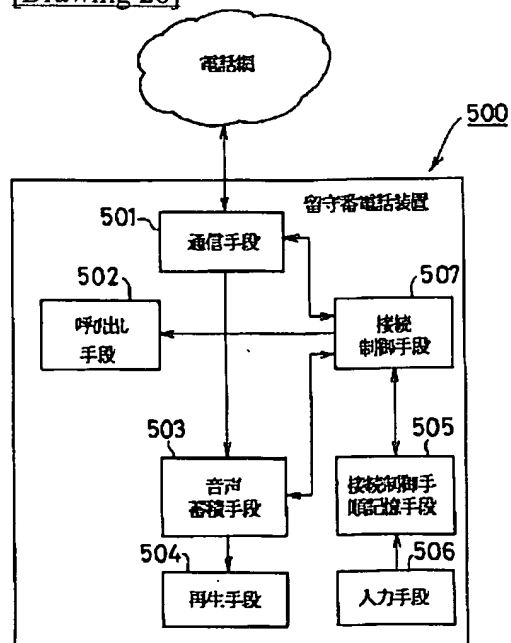
[Drawing 22]



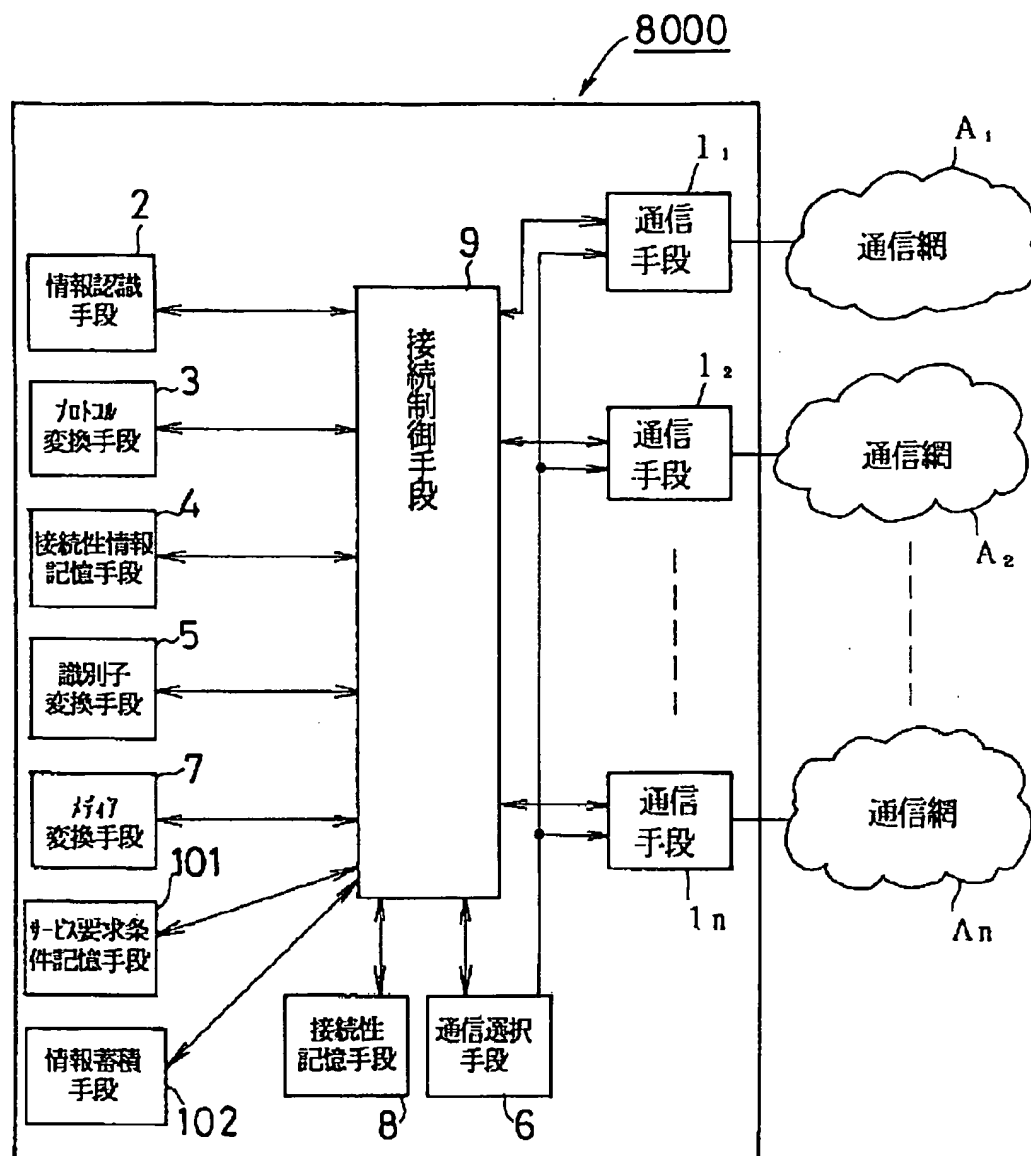
[Drawing 27]



[Drawing 28]

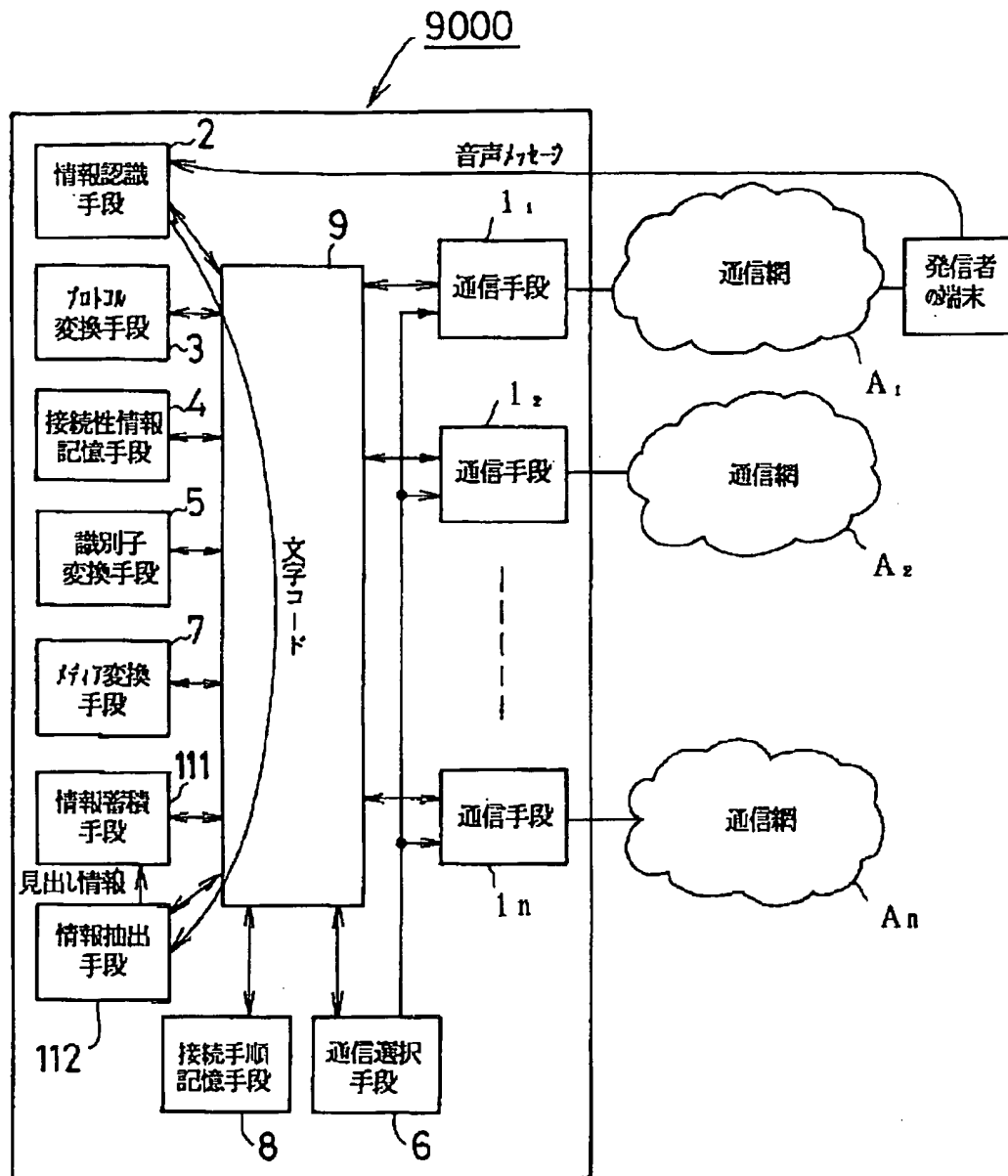


[Drawing 15]

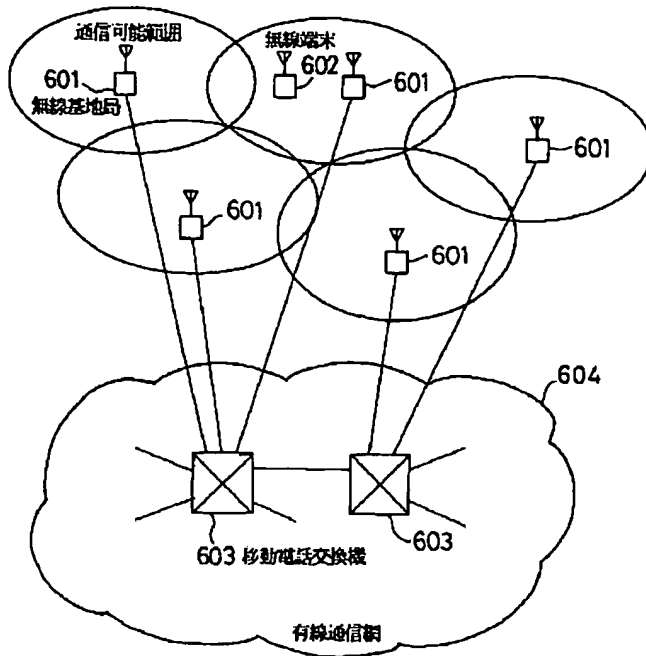


[Drawing 16]





[Drawing 29]



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